

USER'S MANUAL

Revision 07-06-04

DC3 Plus

IMPORTANT

Before you begin...

Please go through the online registration at

<http://www.summa.be/registration.html>

Failure to register might delay response to your warranty and service inquiries.

Summa

FCC NOTICE

The DC 3 has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The DC3 generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the DC3 in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution !

Changes or modifications, not expressly approved by Summa, who is responsible for FCC compliance, could void the user authority to operate this equipment.

DOC NOTICE

The DC3 does not exceed the Class A limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.






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1 INSTALLATION OF THE DC3

1.1 UNPACKING INSTRUCTIONS

The shipping box and any other items, used for packaging, must be saved in the event the printer will need to be moved. Do not transport the DC3 without completely repackaging it in the original packaging. For safety reasons, the unpacking of a DC3 must be done with at least 2 persons.

Before unpacking, make sure to have at least 4 meter of space at one side of the box, because the printer will be rolled down a ramp

Remove the straps and open the flaps of the box, take out the 4 foam blocks. Then remove the box from the pallet; this must be done in a room that is at least 2.5 meter high.

Remove the protective bag then cut all the straps and cable ties. Next, set aside the baskets, vinyl, take-up cores and the accessories box.



FIG 1-1
DC3 ON SHIPPING PALLET

The printer is secured to the base at each side with a bracket. Remove the 4 nuts (#17mm) located at each side. Next, lift the brackets up and out by pulling the bottom part backwards under the DC3, and then remove them.

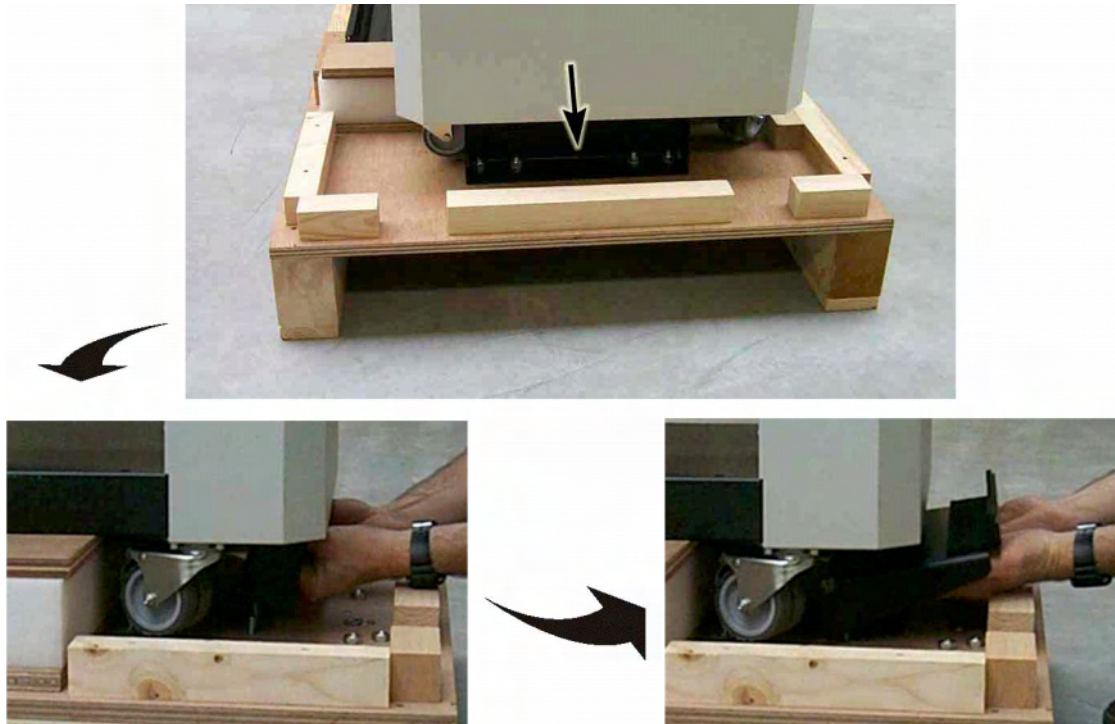


FIG 1-2
UNPACKING DC3 STAGE 2

Remove the two foam blocks from underneath the stand. Do this using the two ramps, which are screwed to the pallet. Slide the ramp under the stand, closest to the end with the foam suspension blocks. From this point on, two people ARE REQUIRED for safety reasons. Lift the DC3 from each side, just high enough so the foam blocks can be pulled out from underneath the DC3.

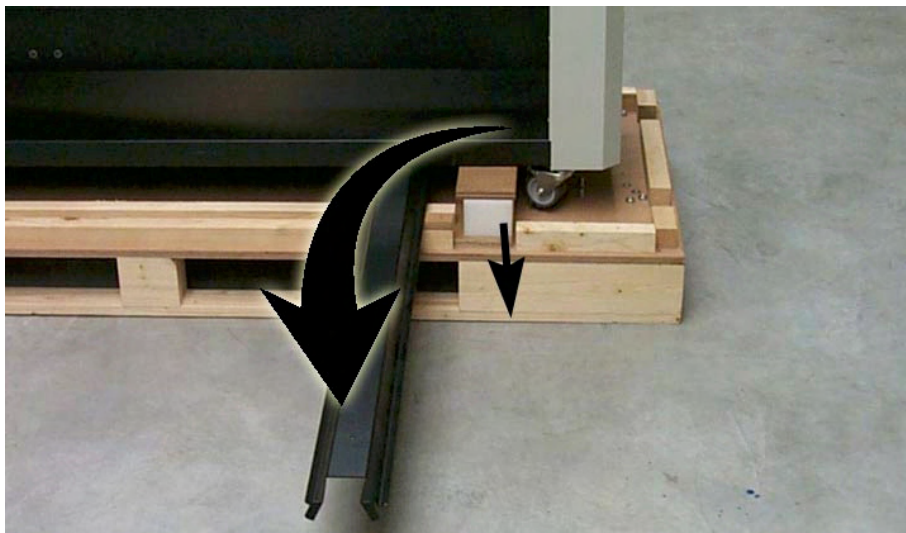


FIG 1-3
UNPACKING DC3 STAGE 3

Position the ramps so the printer can be rolled down from the pallet. Be sure the wheels of the printer are aligned with the ramp legs.

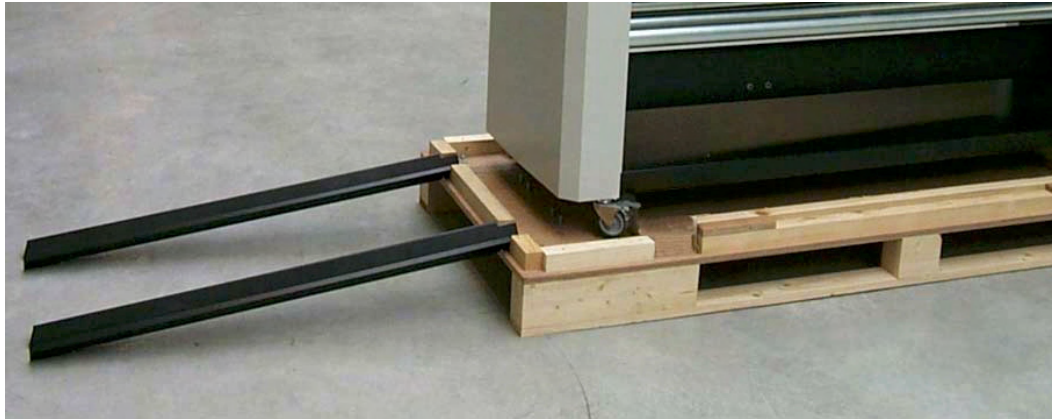
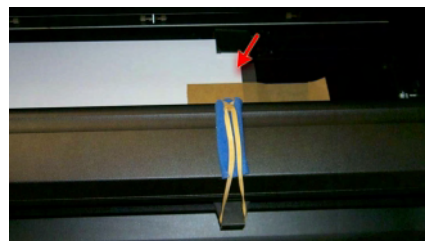
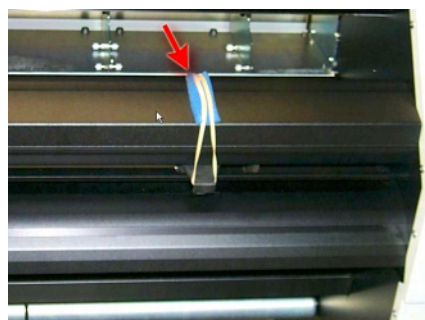


FIG 1-4
UNPACKING DC3 FINAL STAGE 4

Open the front cover and loosen the printer carriage, then remove the foam underneath the carriage, which is protecting the printhead.

Loosen the cutter carriage.

REMOVE THE PROTECTIVE SHEET FROM THE PRINTING SURFACE. THE PRINTING SURFACE IS VERY FRAGILE, PLEASE READ SECTION 3.1.5.



1.1.1 ACCESSORIES AND SUPPLIES

The DC3 is delivered with all the accessories and supplies necessary to start working immediately. Some accessories are already installed in the machine and others are in separate boxes. Please check if everything was delivered with your DC3.

Already installed in the machine:

- Knife holder with knife for cutting.

Packed accessories and supplies:

- 6 empty ribbon cassettes.
- Roll of 3M Summa Certified vinyl media.
- 4 ribbons; cyan, magenta, yellow and black
- 4 media core holders.
- 2 empty cores (7.62cm, 3").
- CD containing Summa ColorControl, Printer Control and User's Manual.
- A Summa ColorControl hardware key (sometimes called a dongle).
- User's manual.
- Slitter cut-off knife (yellow).
- Power cord.
- USB cable and cable holders.
- Pair of white gloves for handling media.
- Spare fuse, spare knife for contour cutting, and spare knife for slitter cut-off knife.

1.1.2 PART NUMBERS FOR ACCESSORIES AND SUPPLIES

The following table contains the description and the part number for DC3 accessories and printer supplies.

Description	Part number	Picture
Thermal Printhead	420-400	
Drag knife (set of 5)	391-360	
Slitter knife	390-290	
Software CD	MD9957	
USB cable	399-111	
Power cord	MC1184	
Drag knife holder	391-332	
Ribbon cassette	420-326	

Ribbon: Cyan Magenta Yellow Black	DC3-602 DC3-601 DC3-600 DC3-603	
Media core holders-set	391-510	
3M vinyl printing media	DC-402	

TABLE 1-1
TABLE OF ACCESSORIES AND SUPPLIES

1.2 PRINTER PARTS AND LOCATIONS

1.2.1 FRONT SIDE

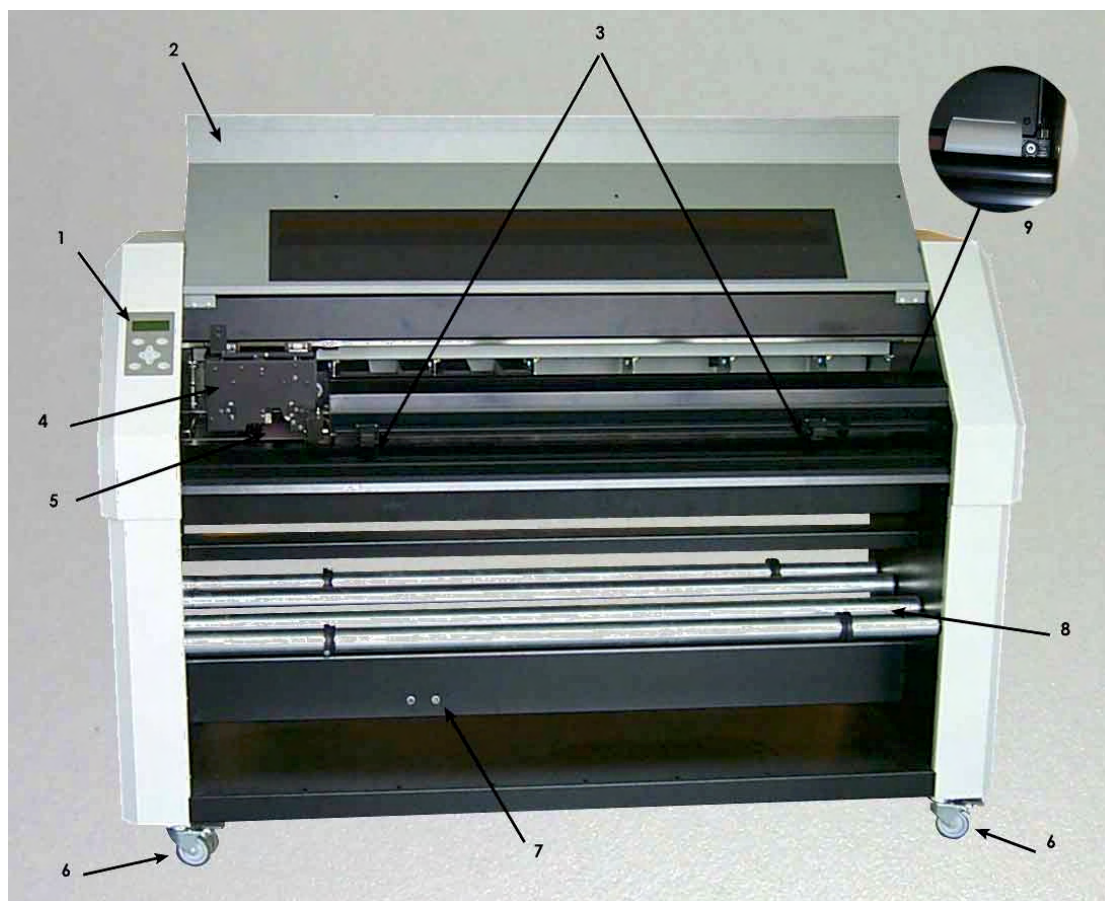


FIG 1-1
DC3 FRONT VIEW

1. *Control Panel and LCD:* All printer activity can be initiated from the 8 key control panel. The LCD informs the user on the current status of the printer, or actions, which need to be taken. A detailed explanation can be found in section 2.
2. *Front Cover:* The front cover protects the media from dust and also the operator from any moving parts during operation. Therefore, the front cover must be kept closed during operation. To open the front cover, you must first pause the machine.
3. *Pinch Rollers:* The pinch rollers clamp the media to the drive system and insure necessary tracking. The pinch rollers are electrically powered from the keypad.

4. *Printer Carriage:* The printer carriage holds the ribbon cassette and the thermal printhead. The thermal printhead is made from fragile ceramic glaze; DO NOT TOUCH THE PRINthead as oil or moisture can corrode the surface. The printhead can also be VERY HOT, just after printing.
5. *Cleaning Plate:* The cleaning plate is used to clean the thermal printhead. While printing, the printhead cleans itself automatically and at regular intervals.
6. *Front Wheels:* The front wheels of the DC3 are equipped with locking brakes. Secure the brakes, once the DC3 is permanently installed, by pressing the locking wheel brake down with your foot.
7. *Media Take-up Sensor:* The media take up sensor enables the take-up rollers. Do not place any objects in front of the sensor.
8. *Take-up Rollers:* The two front rollers are part of the motorized media take-up system, used for unattended printing.
9. *Cutter Carriage:* The cutter carriage is the mount for the contour cutting knife holder.

1.2.2 REAR SIDE

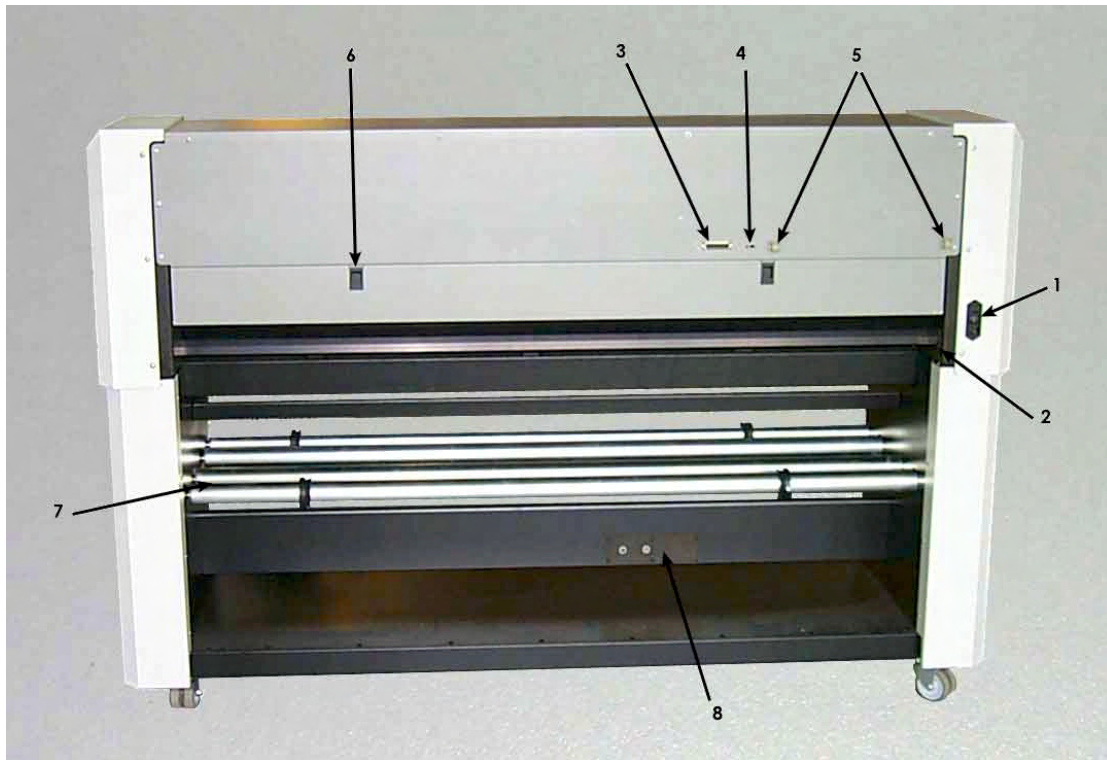


FIG 1-2
DC3 REAR VIEW

1. *Power Entry Module:* The fuse box, the AC power cord receptacle and the on/off switch are located in the power entry module. See section 1.4. for power up procedure and section 3.2. for information about changing the fuse.
2. *Media Load push buttons:* On the right side there are two push buttons, conveniently located to make the loading process easy. For further explanation, see section 1.6.
3. *Parallel Port:* This connector (IEEE1284-B) provides a communication link between the DC3 and the host computer. It can be used as a connection with a LAN, in combination with an Ethernet to parallel converter.
4. *USB port:* This interface is based on the standards specified in Universal Serial Bus Specifications Revision 1.1. It allows for high-speed bi-directional serial communication between the host computer and the DC3.
5. *Cable clamp:* These two cable clamps provide a neat path for the communication cables.

6. *Cassette station latch:* Two latches are located at the back, in order to open up the cassette station. Open only when the machine is paused or switched off.
7. *Media supply rollers:* The two back rollers are part of the media supply system.
8. *Media Supply Sensor:* The media supply sensor enables the motorized media supply rollers. - Do not place any objects in front of the sensor.

1.3 IDEAL OPERATING ENVIRONMENT

Environmental conditions can significantly affect the printer's performance. High humidity, high temperatures, direct sunlight and airborne contamination (dust) can adversely affect print quality. The printer should be located away from windows and doors, preferably within a clean interior room of a building.

Check for the following conditions when installing the DC3:

- Surface must be level without vibration
- Operating temperature should be stable, between 15 - 27 degrees Celsius (60 to 80 degrees Fahrenheit).
- Operating humidity should be stable, between 30% and 80%.
- Area should not be prone to static electricity (no carpeted floors).
- Be sure to allow enough space surrounding the printer for changing media rolls and ribbons. At least 500mm (24 inches) on both sides, and 1000mm (40 inches) behind and in front of the printer.
- The printer uses a universal power supply that can operate from 100 to 240 volts with a line frequency of 50 or 60 Hz.

1.4 POWERING ON THE DC3

1.4.1 GROUNDING



SAFETY WARNING

An insulated ground conductor must be installed as part of the branch circuit that supplies power to the wall outlet to which the printer is connected. The ground conductor must have the same size, insulation material and thickness as the grounded and ungrounded branch-circuit supply conductors, but the insulating seat should be green, or green with yellow striping.

The ground conductor described above must be grounded at the electrical distribution board, or, if power is supplied by a separate system, at the power supply transformer/motor generator set.

The wall sockets into which the cutter is plugged must be of the grounded type. The grounded conductors serving the wall sockets must be properly connected to ground.

For emergency access the machine should be installed near to the socket-outlet for easy access.

See section 1.4 for the minimum and maximum operating voltage.

For information about operating voltage and the exact fuse ratings, see Section 3.2.

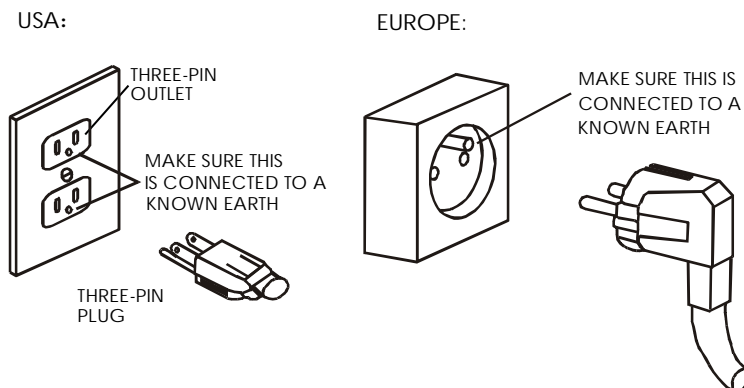


FIG1-4:
GROUND CONNECTION

**IMPORTANT OPERATIONAL TIP**

This printer must only be used with a power outlet that is properly grounded to earth. Use of an ungrounded outlet exposes the operator to risk of electric shock, and will also lead to malfunctioning of the printer.

1.4.2 POWER-ON PROCEDURE

➔ To power on the DC3, proceed as follows:

**CAUTION**

Be sure the power switch of the printer is turned off before connecting the power cord. To be sure, press on the "0" side of the ON/OFF rocker switch.

Do not switch the machine on unless the cassettes contain ribbons or core holders contain vinyl media.

1. Plug one end of the AC power cord into the AC power cord receptacle, located at the printer's rear panel.
2. Plug the other end of the AC power cord into the wall socket.
3. Press the "I" side of the ON/OFF rocker switch, located at the rear next to the power inlet switch, in order to power ON the DC3.
4. The LCD display will activate and an initializing process will begin. Depending on whether there is media loaded or not, the process will be different. When there is no media loaded, the DC3 will prompt the user for a media load procedure. When media is loaded, the DC3 will check the presence of the cassettes and estimate how much usable ribbon is remaining on the roll.

1.5 CONNECTING THE PRINTER TO A COMPUTER

The DC3 supports two types of data transfer: USB and Parallel.

1.5.1 USB CONNECTION

The USB connection provides bi-directional communication between the printer and the computer. This connection must be used when using the software utility program called *Summa Printer Control* (see section 2.3.).

When the DC3 is connected for the first time to a computer, the computer will detect it and ask for the USB drivers. The drivers are located on the CD with the manual. Insert the CD and follow the instructions given by the Microsoft Windows installation wizard.

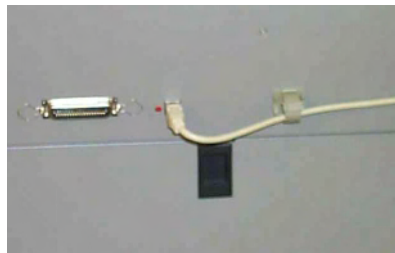


FIG 1-5
USB CONNECTION

1.5.2 PARALLEL CONNECTION

The parallel connection is a standard IEEE1284 connection. This connection can either be used for a direct parallel connection with the computer, or in combination with a miniature print server to connect the printer to a network.



FIG 1-6
PARALLEL CONNECTION

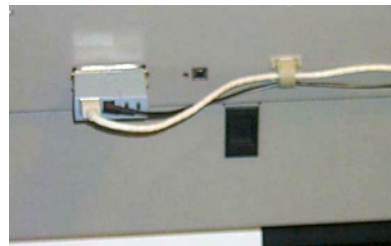


FIG 1-7
CONNECTION USING PRINT SERVER



CAUTION

Turn the printer and computer OFF before connecting the parallel cable. To protect both devices, follow the on/off sequence for the computer. Refer to the computer's operating instructions.

1.6 MEDIA HANDLING

1.6.1 LOADING MEDIA

The DC3 is designed to work with rolls of media, not sheets.

It is advised to use cotton gloves while loading the media, otherwise the surface of the media becomes contaminated by oil from fingers, and the beginning of the printout will be unusable.

Four media core end holders are delivered with the machine, two for the supply side and two for the take-up roll. The printer aligns the media automatically during operation. Therefore, the left side of the vinyl roll must be straight (seen from the front of the DC3).

To load the media proceed as follows:

While loading the media, do not touch the gray printing surface (platen)! Doing so might permanently damage the delicate printing surface.

Switch the printer on.

Insert a media core holder in each end of the media roll. Check first if they are loosened. If not, loosen them with the black knob at the side. Figure 1-7 shows a loosened (1) core holder and an expanded (2) core holder.



FIG 1-7
MEDIA CORE HOLDER

Insert the loosened core holders into each end of the roll. Then tighten them with the black knob, be sure both core holders are secured.

Place the media roll on the DC3 rollers. The right core holder guide is at a fixed position on the supply rollers bar. The left guide is adjustable. Make sure the media roll is positioned as in figure 1-8. Guide the beginning of the vinyl around the second supply roll (1). Then make a big loop underneath the two roller bars, and pull it upwards and into the machine.

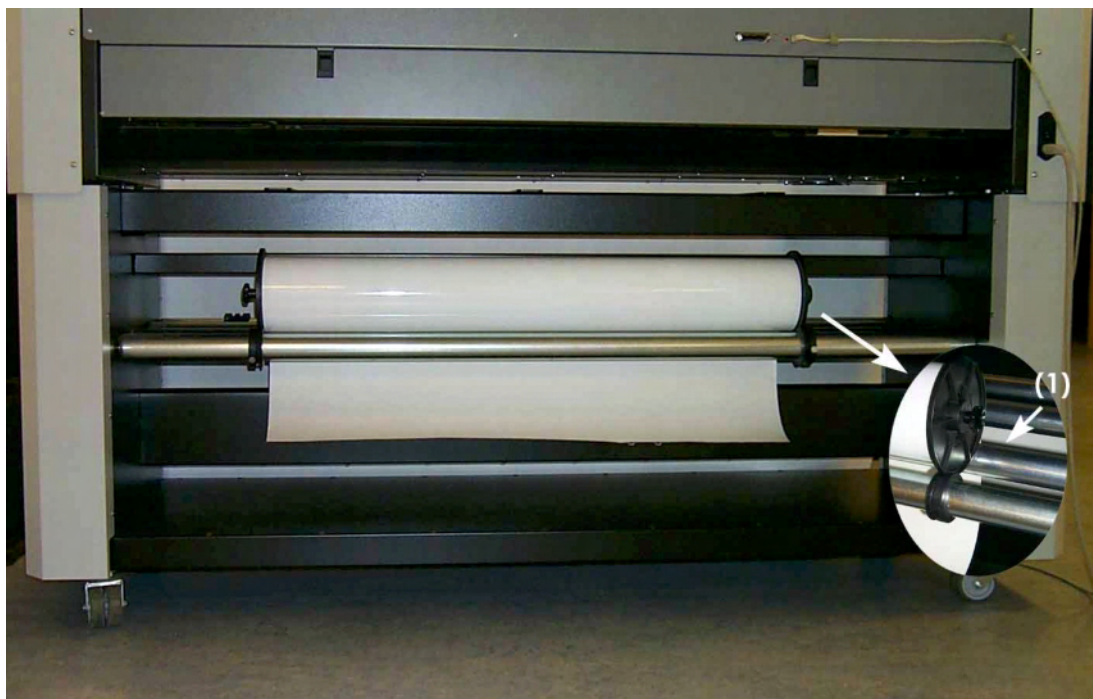


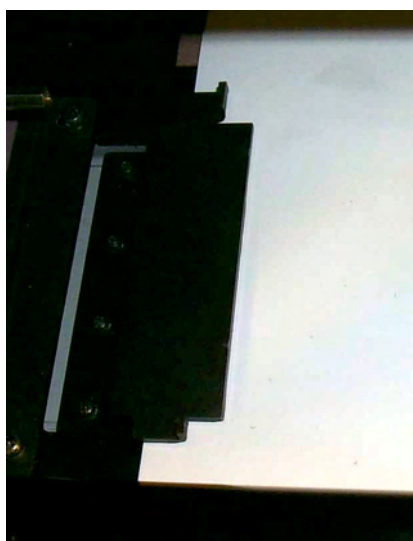
FIG 1-8
POSITION OF THE SUPPLY ROLL ON THE DC3

To unwind the media roll, press the pushbutton (1), located on the right side. Hold the media so it does not touch the floor. Insert the vinyl between the cassette station and the base. As soon as the vinyl covers a sensor, the rear clamp will come down and hold the vinyl.




FIG 1-9
LOADING ROLL AT THE BACK OF DC3

Next, return to the front of the machine. Hold the vinyl and push the CLAMP.



The rear clamp will release the vinyl. Now pull the vinyl forward, while pulling the media all the way to the front, make sure it is guided underneath the left clamp.

Align the edge of the media using the alignment markers (1), on the front of the

base, then press . Just before the DC3 starts to print, it will test the media alignment and the position, relative to the origin, before it starts printing. If the media is too far from the origin, then the DC3 will "Park" the media on the starting point (origin). If it is not loaded straight, it will align it automatically.

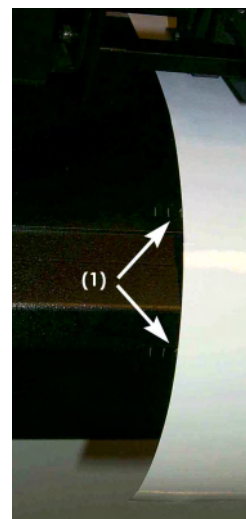


FIG 1-10a TO 1-10c
LOADING ROLL AT THE FRONT OF THE DC3

The pinch rollers will now come down and the media is properly loaded. The machine will remain paused until the front cover is closed.

1.6.2 USING MEDIA TAKE-UP ROLLERS

The DC3 is equipped with an automatic (motorized) roll take-up system. The take-up rollers are only active if the DC3 is printing.

If a printed image is to be contour cut, the take-up rollers MUST be disabled.

To use the take-up rollers, follow procedure below:

Using an empty media core, insert media core holders into each end and attach a piece of scrap vinyl to the core with adhesive tape (minimum 1 meter long). Place this core and vinyl on the DC3 as shown in the picture.

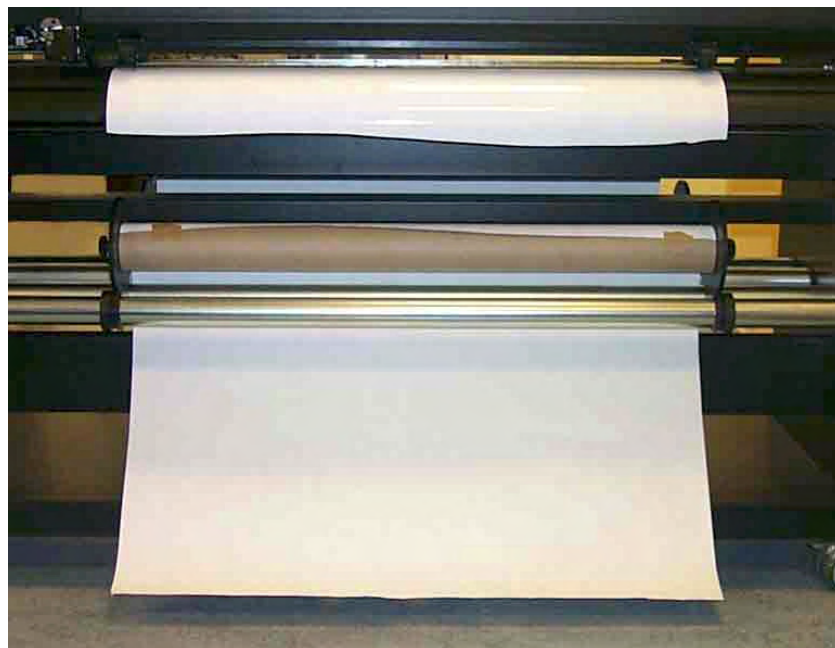


FIG 1-11
PREPARING TAKE-UP ROLL

Attach the scrap media to the edge of the vinyl. Allow for some slack so the DC3 can align and park the media if necessary. If the take-up rollers are enabled, and if the DC3 is printing, then the media will be rolled up.



FIG 1-12
USING THE TAKE-UP ROLL

1.6.3 UNLOADING THE MEDIA.

First, detach the media from the take-up roll (if used).

Then push on the ▲ (up arrow) key until the media does not move any further.

Go to the back of the machine and press on the top switch. The machine will rewind the media supply roll and move the media from under the clamps.

Each time the media type is changed, the user must perform the media calibration (see section 2.2.4.3) and the line feed calibration (see section 2.2.2.5). Failing to do so may result in poor print quality.

1.6.4 USING THE MEDIA BASKET

It is strongly recommended to always use the baskets while printing. The basket prevents the vinyl from touching the ground or the base of the DC3, thus preventing the vinyl from collecting dust.

When the DC3 is used for print and cut, then the media baskets, front and rear, **MUST** be used, otherwise the vinyl will pick up dust, damaging the print.

The front and rear baskets are designed to hold at least 6 meter of vinyl. Depending on the type of vinyl, it is possible to hold up until 10 meters.



FIG 1-13
REAR BASKET

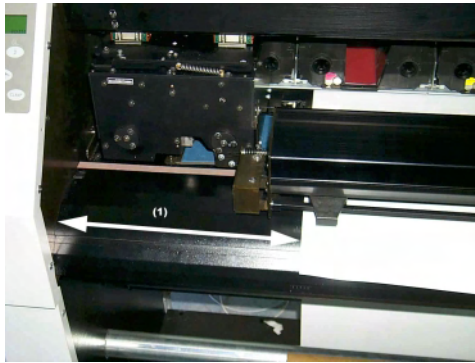
1.6.5 PREPARING THE DC3 FOR LONG PRINT-OUTS

1.6.5.1 INTRODUCTION

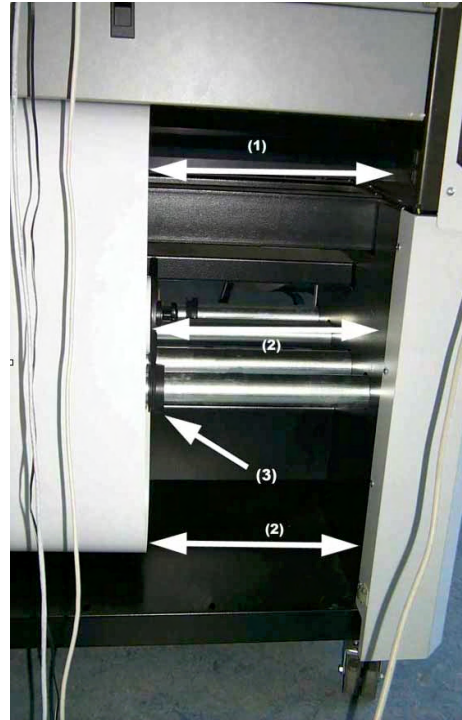
The DC3 has a fixed position at the rear for the rollguiding of the flange. It is possible that some types of vinyls are not wound up even (e.g. the core sticking out). This results in a forcing of the path of the vinyl in a wrong direction. Following procedure can help to solve that problem.

1.6.5.2 PROCEDURE

1. Load media in the machine as described in section 1.6.1.
2. Print out a small test of 2 or 3 band-passes high.
3. Check the path of the media. The distances, marked with the white arrows and the same number, should all be the same. The middle arrow of the second photo points to the roll itself



4. If not, check first if the media has moved from its place of origin. If so reload with a maximum loop at the back.
5. If it did not move, then reposition the rollerguide (3) so that the path of the vinyl is as shown above. Make also sure that the flange is flush to the core.



1.7 LOADING RIBBON CASSETTES

1.7.1 LOADING AND REMOVING THE CASSETTES

The DC3 is delivered with 6 empty cassettes. The cassettes can be loaded or removed from the cassette station at any time, even during printing. If the printer is missing a color, then it will give a message on the LCD just before it needs the color. The machine automatically detects the end of a ribbon. If the machine runs out of a certain ribbon color while printing, then it will pause until the operator inserts a new ribbon. As soon as the machine detects a new roll, it will continue to print and complete the image.

ALWAYS load or remove cassettes from behind the printer. To remove a cassette, open the rear cover by pulling down both latches simultaneously.



FIG 1-14
REAR CASSETTE STATION COVER

To remove a cassette, lift it enough to pass over the rubber bumper, then pull it backwards and out of the printer.

To load a cassette, push it gently into an open location, until it just passes the rear bumper, then press it down and pull it backwards against the bumper.



FIG 1-15
REMOVING A CASSETTE



FIG 1-16
LOADING A CASSETTE

Close the rear cover. After the media is loaded, DC3 will take the cassette and estimate the amount of ribbon in the cassette available for printing.



CAUTION

Do not insert empty cassettes, without ribbon.

1.7.2 REFILLING RIBBON CASSETTES

The DC3 prints by transferring pigmented vinyl resin directly onto vinyl media. Each color is printed separately in strips (appx. 10cm wide), printing yellow first, then magenta, cyan and sometimes black. The media is then advanced (feed) an exact distance in order to print the next strip (band), carefully aligning each pixel.

The ribbons are wound onto plastic cores, which are unique to the DC3 cassette and printer carriage. First, remove the protective ribbon wrapping and place the RI (ribbon identification) chip aside. This ribbon chip contains information about the ribbon's color formulation and transfer energy, necessary for printing. The RI chips are color-coded for easy identification.

1. Open the cassette by pressing the release tabs on each side (1), and then lifting upward the top hinges, in the back, to the bottom part.

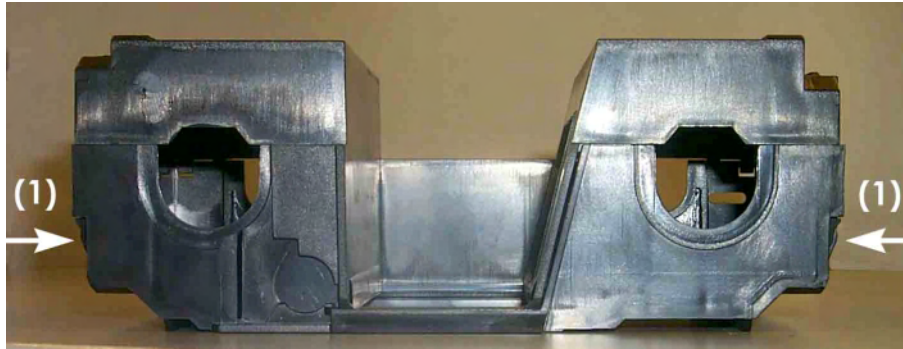


FIG 1-17
CASSETTE TOP RELEASE TABS

2. Insert the RI chip into the bottom of the cassette (orientation is shown in figure 1-17 – the arrow indicates the direction for inserting).
3. Place the ribbon into the cassette, as shown below. There is also a small diagram inside the cassette bottom, to help remind the loading direction.

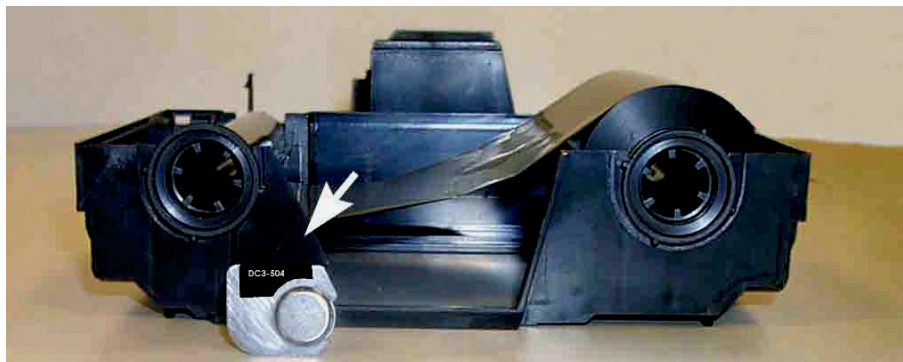


FIG 1-18
LOADING RIBBON AND RIBBON INFORMATION CHIP INTO THE CASSETTE

4. When closing the cassette, make sure the hinge pins (top piece) fit securely into the notched out bottom part of the cassette (2).

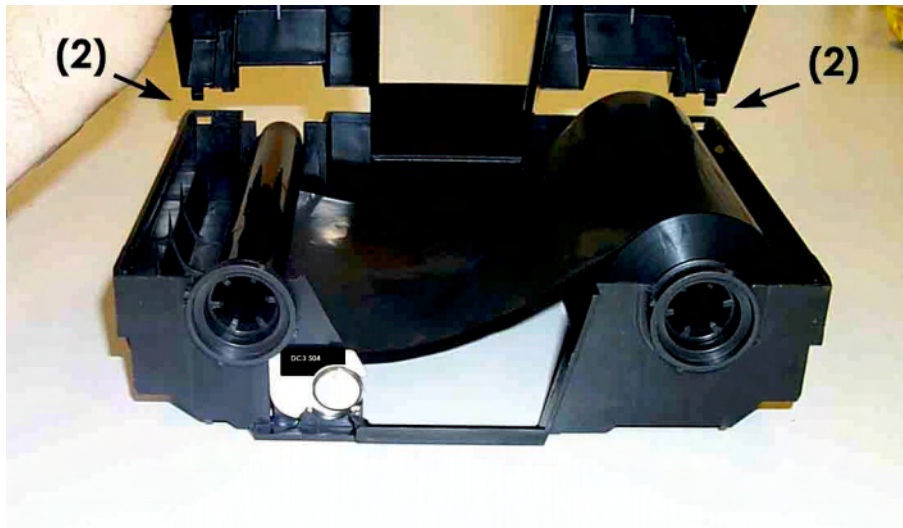


FIG 1-19
CLOSING THE RIBBON CASSETTE

1.8 CONTOUR CUTTING KNIFE INSTALLATION



SAFETY WARNING

The DC3 uses razor-sharp vinyl cutting knives. The knife blades may cause serious personal injuries if handled without proper caution. Use extreme care when operating the cutter; and when installing, removing or handling the cutter's knife blade!

➔ To set up the knife, proceed as follows:

1. As shown in Figure 1-19, insert the knife blade into the knife holder.

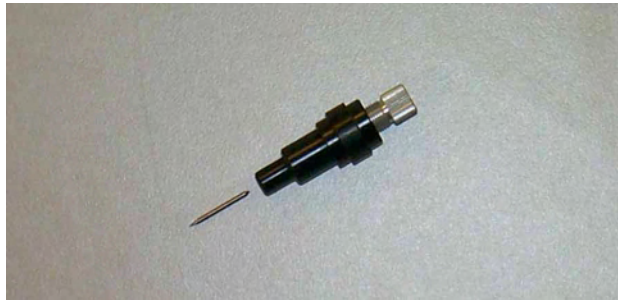


FIGURE 1-20
KNIFE BLADE INSERTION FOR CONTOUR CUTTING

2. Set the knife blade length to zero by aligning the blade tip with the tip of the holder. An easy way of performing this is by holding the knife holder against your fingertip and gradually increasing the blade length, by turning the adjustment knob, until you feel the knife tip touching your fingertip.
3. Extend the tip of the blade the distance required for exact cutting depth into the vinyl media, as shown in Figure 1-20. The blade should only extend beyond the knife holder's tip, sufficient only to completely cut through the film and adhesive layers, yet avoiding penetration of the polyester liner (backing) material. Cutting deeply into the backing will damage the blade, and cutting through the backing will damage the cutting strip.

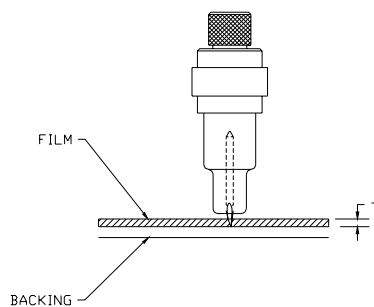


FIGURE 1-21
BLADE LENGTH ADJUSTMENT

4. Turn the cutting depth adjustment screw clockwise to increase the cutting depth. Turning the cutting depth adjustment screw anticlockwise will decrease the cutting depth.

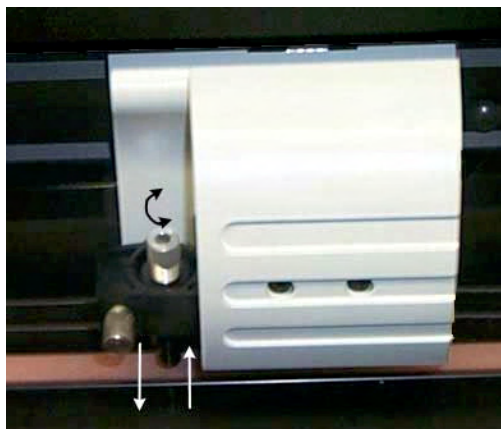




FIGURE 1-22
SETTING KNIFE DEPTH

5. To install the knife into the tool carriage:
 - Loosen the clamping screw and insert the knife holder. Press the holder down, firmly seating it.
 - Tighten the clamping screw.
6. Set the knife pressure as follows:
 - Power ON the DC3 and load a piece of media (See 1.7.).
 - Press the  key.
 - Press the  key, until 'CUTTER MENU' appears on the second line of the LCD screen.

- Press the **2** key once.
- The parameter displayed is the knife pressure, which can be changed between the range of 0 to 400gr.
- Click the **1** key to perform a knife depth test, as illustrated below.

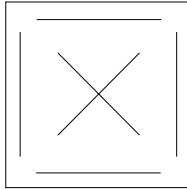


FIG 1-23
KNIFE DEPTH TEST PATTERN

The knife depth is correctly set when the test pattern is visible on the front side of the media backing, but not on the rear side of the media backing.

Increase the knife pressure using the **➤** key when the cut pattern is not visible on the front side of the media backing. Decrease the knife pressure with the **➤** key when the cut pattern is visible on the rear side of the media backing. Press the **1** key or the **2** key to save the changed setting.

In general, you should increase the knife depth and knife pressure when using thicker vinyl types.

NOTE

The ideal knife pressure setting depends upon the thickness and the type of media to be cut; adjusting the knife pressure will require some practice. Typically, you should increase the pressure when cutting thicker types of vinyl. For thinner types of vinyl, you will normally have to reduce the knife pressure.



CAUTION






After setting the cutting depth and/or the knife pressure, perform a thorough visual check of the knife blade, which can be seen protruding from the knife holder, and then test cutting on a scrap of vinyl media for proper results.
DO NOT OPERATE THE CUTTER if the knife blade cuts through the media backing, as this will seriously damage the rubber cutting strip and cutting knife blade.

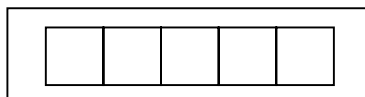






CAUTION

To prevent damage to the cutter, check the depth of the knife blade tip and the quality of the cut each time you load a different type of vinyl media into the DC3.

7. To change the knife offset, proceed as follows:

- Power ON the cutter, load a piece of media into the cutter (See 1.7.).
- Press the  key.
- Press the  key three times.
- Press the  key once.
- Press the  key once.
- The parameter displayed is the knife offset, which can be changed in the range of 0.00 to 1.00mm.
- Click the  key to perform a knife-offset test, as illustrated below.



If the offset value is set too low, the rectangles will not close.
When the offset value is set too high, the rectangles will be distorted.
Increase the knife offset with the  key when the squares seem rounded at the corners. Decrease the knife offset with the  key when the squares seem to have little spikes at the corners. Press the  key or the  key to save the changed setting.

SECTION 2

2 OPERATION INSTRUCTIONS

2.1. THE CONTROL PANEL

Figure 2-1 shows the control panel of the DC3. The main functions of the LCD and the control panel keys are explained in the following paragraphs. It is advised not to touch the control panel while the machine is printing or cutting, except for canceling the current job.





FIG 2-1
DC3 CONTROL PANEL

2.1.1 THE LIQUID CRYSTAL DISPLAY



The liquid crystal display (LCD) contains 4 lines of 20 characters. The LCD provides DC3 status information during operation and displays menu options for the configuration of the DC3.

The various menu and submenu items are always presented in a loop, which means when the last menu or submenu item is displayed, pressing the appropriate key will automatically take you back to the first item of the same menu or submenu.



2.1.2 THE AND KEY

The function of the  and  key depends on the current status of the DC3. The bottom line of the LCD displays the function of the keys.


2.1.3 THE ARROW KEYS

The use of the arrow keys varies according to the operation in progress. For, example when working with different sub menus, the  or  arrow keys select the next or the previous submenu.


Values in a submenu can be changed by pressing the  or  arrow keys.

When the DC3 is in normal operation, pressing  or  moves the media backward and forward.

2.1.4 THE KEY

The  key returns back a step in to the previous menu level. To get at the top level of the menu, press this key three times. The DC3 will also then be ready for printing.

2.1.5 THE KEY



The  key toggles the status of the clamps. This key works only when the DC3 is in a ready state. There are three "Clamps".

The rear clamp, the left clamp and the pinch rollers. All three serve to hold the media in place while printing and transport media forward and backward.

The LCD prompts the user for a loading procedure when all the clamps are raised.

2.2. MENU STRUCTURE OVERVIEW

2.2.1 MAIN MENU

The main menu can be entered when [MENU] is visible on the bottom line of the LCD. Pressing 3 times on the  key will bring the DC3 to this state unless the machine is loading. Press the  key to enter the main menu. The main menu items give access to submenus or commands. Press the ▲ or ▼ key to go from one menu item to another.

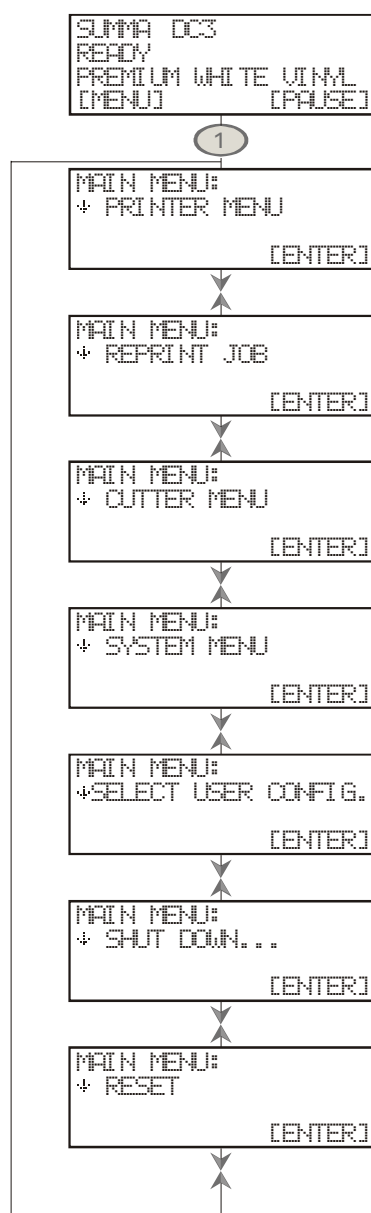






FIG 2-2
MAIN MENU


2.2.1.1 PRINTER MENU

The DC3 will reset when pressing . This reset is not a full reset. To completely reset the machine, perform a cold reset (switch off and on the power to the machine). This reset is usually used for canceling current print jobs or canceling non-fatal errors or alarms.


2.2.1.2 REPRINT JOB

The DC3 stores every sent job on hard disk. If the hard disk is almost full, the oldest jobs will be deleted. After pressing , press the ▲ or ▼ key to scroll through the saved jobs. Push the ► or ◀ key to change the amount of copies that need to be reprinted. Push the  key to start reprinting the chosen job. Pressing  removes all jobs from the hard disk.


2.2.1.3 CUTTER MENU

Pressing  enters the cutter menu. The cutter menu is explained in section 2.2.3.

2.2.1.4 SYSTEM SETUP

Pressing  enters the system setup. The system setup menu is explained in section 2.2.4.

2.2.1.5 SELECT USER CONFIGURATION


The DC3 stores 16 user configurations. Push the ► or ◀ key to change the configuration. Push the  key to confirm the selection. On the LCD, the active knife pressure is marked with an * (asterisk).

The user configurations are setup to quickly change several parameters depending on the type of vinyl or kind of job.


Settings include:

- Energy setting (e.g. Density see 2.2.2.2)
- Line feed calibration parameters (see 2.2.2.7)
- Media calibration parameters (see 2.2.2.7)
- Print & Cut calibration parameters (see 2.2.4.4)
- OptiTrac(see 2.2.2.5 and 2.2.2.6), Color Offset (see 2.2.2.4) and Dot overlap (see 2.2.2.3) parameters
- Knife pressure (see 2.2.3.1), Knife offset (see 2.2.3.2) , velocity(see 2.2.3.3) and overcut (see 2.2.3.4)
- Internal parameters.

2.2.1.6 SHUT DOWN....

After pressing , the DC3 removes any cassette from the carriage, closes any open files on the hard disk and raises the pinch rollers. It is advised to use this key when shutting down the DC3, especially for minimizing wear on the pinch rollers. If the pinch rollers are left down for a long period of time, a flat spot is created on the wheel and tracking becomes a problem and is not guaranteed any more. The pinch rollers are automatically raised when the DC3 is idle for more than 4 minutes.

2.2.1.7 RESET

When pressing , the DC3 will reset. This reset is not a full reset. To completely reset the machine, perform a cold reset (switch off and on the power to the machine). This reset is usually used for canceling current print jobs or canceling non-fatal errors or alarms.

2.2.2 PRINTER MENU

The printer menu contains parameters and small routines to optimize the printing quality.

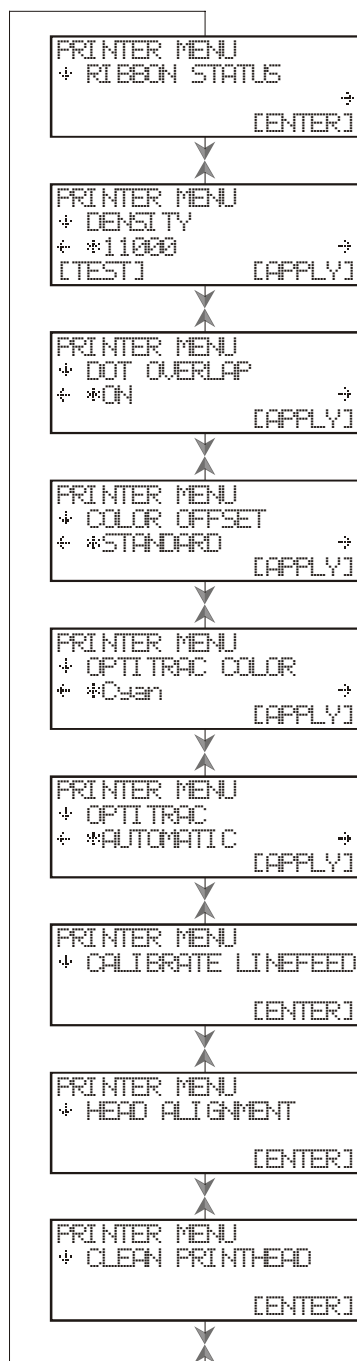


FIG 2-3
PRINTER MENU

2.2.2.1 RIBBON STATUS

The RIBBON STATUS sub-menu is used to check the status of the cassettes and their locations. Press the **2** key to enter the sub menu. Now the status of each cassette and location can be checked. Press the **▲** or **▼** to scroll through the different locations.



FIG 2-4
STORE STATUS

The first line shows the current selected location. When there is no cassette in the station, instead of "OK", the LCD will read "EMPTY" and the remaining LCD will be empty. The third line displays the color of the ribbon. On the bottom line, the amount of ribbon remaining in the cassette can be read. This amount is only an approximation of the actual length in the cassette.

2.2.2.2 DENSITY

Print density refers to the level of energy being sent to the printhead. Print densities change between different media types because energy is absorbed differently, depending on the vinyl formulation, liner, etc. With the **➤** or **➤** key the density can be raised or lowered. If the density is too low, the transfer will be incomplete (less than 100%). If the density is too high, the colors will become matted and washed out. Or, the ribbon may start to wrinkle. On the LCD display, the active setting is marked with an * (asterisk).

With the **1** key a density test can be printed out.

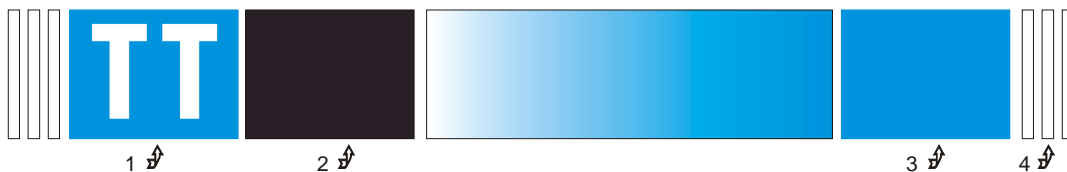


FIG 2-5
INTERNAL DENSITY TEST

1: If the density is set too high then in area 1 the ribbon will tick too long to the media while printing and leave matt areas behind.

2: If the density is set too low, then this area will not be 100% black

3: If the density is set too high, then this area will darker then 95% cyan, the white holes will become filled randomly.

4: If the density setting is too low, then the lines will not be printed evenly.

The density test is optimized for cast vinyls. Other types of vinyl might result in conflicting results, which means that the media is probably less suited for thermal transfer printing.

2.2.2.3 DOT OVERLAP.

The DOT OVERLAP sub-menu is used to activate or deactivate the dot overlap. When the DC3 prints the next pass of an image, the last dot on the edge of the previous pass is reprinted. Dot overlap can be set to ON, OFF or HALF by pressing the ► or ◀ key. Then press **2** to confirm. It is advised to set dot overlap to ON. When printing with a mask (see 5.1.4.5), set it to HALF. On the LCD display, the active setting is marked with an * (asterisk).

2.2.2.4 COLOR OFFSET

The COLOR OFFSET sub-menu is used to set the color offset feature. While printing, the DC3 shifts each color plane 8 dots (STANDARD). This is to blend the printed strips together more gradually. The figure below shows how offset color plane strips are printed. Color offset can be increased (16 dots: HIGH) or disabled (0 dots: DISABLED) by pressing the arrow keys. Then press **2** to confirm. It is advised to set color offset to STANDARD. On the LCD display, the active setting is marked with an * (asterisk).

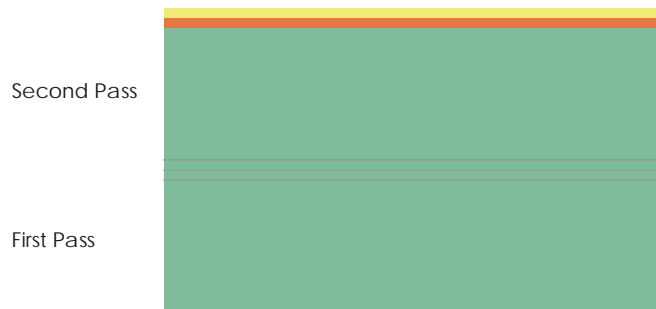


FIG 2-6
COLOR OFFSET

2.2.2.5 OPTITRAC COLOR

The DC3 prints and measures small lines, located at each side of the print, to optimize the tracking performance. The color of these lines can be changed within this menu. Be sure to use colors that are in contrast with the vinyl color. The menu option to change color is useful when printing monochrome, or on colored vinyl. The default value for white vinyl is cyan.

Each time the color of the OptiTrac lines is changed, perform a recommended line feed calibration (see section 2.2.2.7). Failing to do so may result in poor print quality.

2.2.2.6 OPTITRAC

This menu allows setting the OptiTrac feature to automatic or ON. The default setting is automatic, which means the OptiTrac lines are omitted when the height of the design is less than one print pass wide (98mm). Setting this option to ON means the lines are always printed.

2.2.2.7 CALIBRATE LINEFEED

The calibrate linefeed test is used to calibrate the media feed. It is advised to do this test each time a vinyl roll is changed. This test is fully automatic. After pressing **2**, There is a choice between a recommended line feed test [TEST 1] and a simple line feed test [TEST 2]. The recommended line feed test combines the simple line feed test together with a media calibration test (see 2.2.4.3).

After pressing **1**, a test pattern is printed and then cut out. The DC3 then prompts the user to weed a rectangle, do so. Now the DC3 calibrates the OptiTrac sensor and then completes the line feed test. The printed lines are measured and then internal parameters are adjusted automatically. If the DC3 has to compensate too much, it will ask the operator to redo the test.

After pressing **2**, a test pattern is printed and the printed lines are measured and then internal parameters are adjusted automatically. If the DC3 has to compensate too much, it will ask the operator to redo the test.

After the calibration, the printer returns from the menu and into the ready state. Fig 2-6 shows the pattern that is printed using this test.



FIG 2-7A
RECOMMENDED LINE FEED CALIBRATION TEST



FIG 2-7B
SIMPLE LINE FEED CALIBRATION TEST

Always perform a recommended line feed test when the OptiTrac color is changed or when the media type is changed.

The simple line feed test is used when just changing the roll or when the DC3 prompts the user to redo the line feed test

2.2.2.8 HEAD ALIGNMENT TEST

The head alignment test is used to check if the carriage is aligned (mounted) correctly on the DC3. This test should only be performed after a head or a carriage change. Fig 2-7 shows the pattern that is printed using this test. The lines must meet, in the middle, within a certain tolerance.

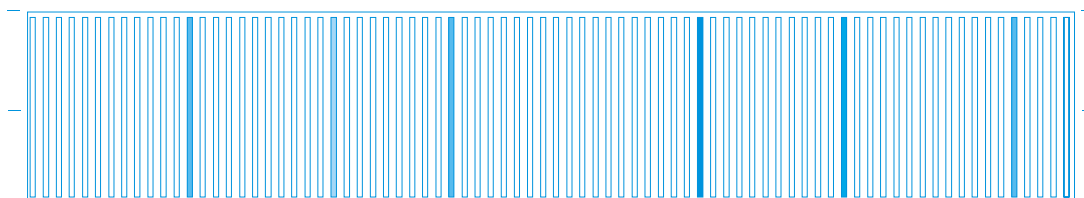


FIG 2-8
HEAD ALIGNMENT TEST

2.2.2.9 CLEAN PRINthead

This routine cleans the printhead. If the transfer of the ribbon has degraded this cleaning procedure will clean the printhead automatically. Also, the printhead is periodically cleaned while printing. Do not use this cleaning routine too often as it can prematurely wear down the printhead surface. This procedure cleans any build-up from the heat resistant layer, which is coated on the backside of the ribbon.

2.2.3 CUTTER MENU

The cutter menu contains parameters and small routines to optimize the cutting quality.

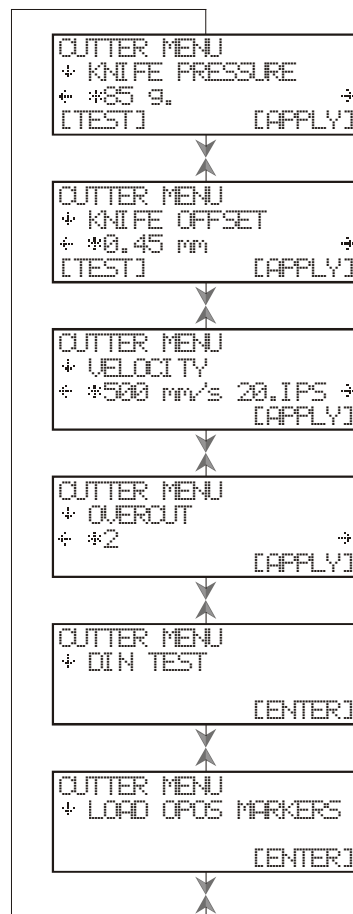


FIG 2-9
CUTTER MENU

2.2.3.1 KNIFE PRESSURE

The KNIFE PRESSURE parameter is used to set the cutting pressure of the knife. Press the \blacktriangleright or \blacktriangleleft arrow keys until the desired pressure is displayed on the LCD, then press **2** to confirm.

The knife pressure can be set between 0 and 400 grams. Knife pressure set-up is explained in detail in section 1.9. On the LCD, the active knife pressure is marked with an * (asterisk).

2.2.3.2 KNIFE OFFSET

The KNIFE OFFSET parameter is used to set the distance between the knife blade tip and the center axis of rotation.

The default knife offset value is .45 mm.

Press the ➤ or ➤ arrow key until the desired knife offset is displayed on the LCD and press **2** to confirm.

The value can be set between 0 and 1 mm.

Make sure that the selected knife offset value matches that of the knife blade. Some fine-tuning may be necessary because of the mechanical tolerances on the knife. To verify the knife offset, a test can be cut by pressing the **1** key.

If the offset value is set too low, the rectangles will not close.

When the offset value is set too high, the rectangles will be distorted.

On the LCD display, the active setting is marked with an * (asterisk).

2.2.3.3 VELOCITY

The VELOCITY submenu is used to set or modify the cutting velocity.

The default velocity is 500 mm/s (20 ips).

Press the ➤ or ➤ arrow keys until the desired speed is displayed on the LCD and press **2** to confirm.

The velocity can be set between 50 mm/s (2 ips) and 600 mm/s (24 ips).

On the LCD, the active plotting speed is marked with an * (asterisk).

2.2.3.4 OVERCUT

The OVERCUT submenu enables you to generate an overcut, in order to improve weeding the cut vinyl. Press the ➤ or ➤ arrow keys to change the value and press **2** to confirm.

The default overcut is set to 2.

The overcut setting can be disabled (=0) or set to any value between 1 and 10. Each unit is about 0.1 mm or 0.004 ".

On the LCD, the active value is marked with an * (asterisk).

2.2.3.5 DIN TEST


The DIN TEST CUT performs an electrical and mechanical test of the cutter, in order to check the cut quality, but also provides the user with feedback on knife setting, knife pressure, knife offset and cutting depth.

This test cut is always a DIN A4 portrait/A-size image. This cut is always executed in the sequence prescribed by the ISO DIN standard.

Press the  key to execute.

2.2.3.6 LOAD OPOS MARKERS

This initiates the special load procedure to read the pre-printed markers. This feature is completely explained in chapter 6 of this manual.

Press the  key to execute and follow the instructions on the LCD.

2.2.4 SETUP MENU

The setup menu contains parameters, tests and info on the DC3 that are not often used.

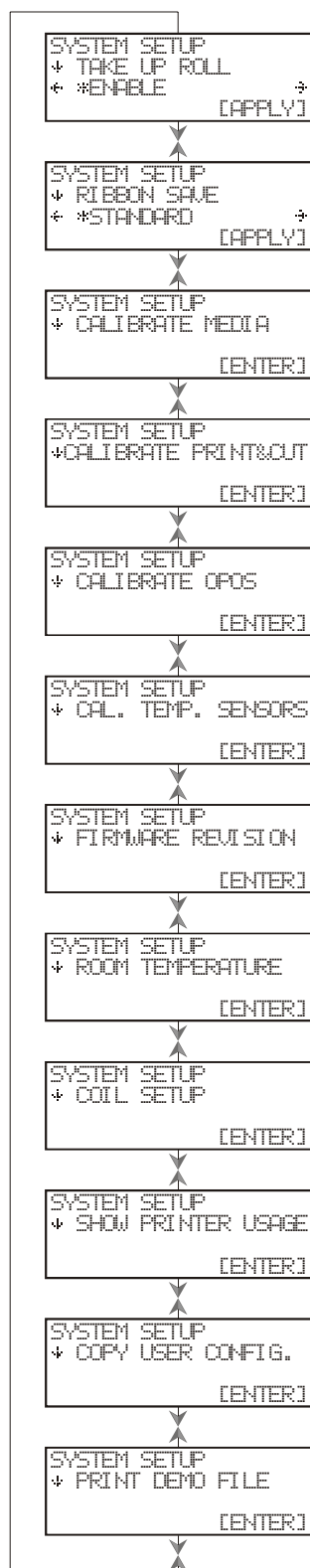


FIG 2-10
SETUP MENU

2.2.4.1 TAKE-UP ROLL

The TAKE-UP ROLL sub-menu is used to activate or deactivate the take-up rollers. The take-up rollers can be enabled or disabled by pressing the ► or ◀ key. Then press **2** to confirm. The default setting is STANDARD. On the LCD display, the active setting is marked with an * (asterisk).

2.2.4.2 RIBBON SAVE

The RIBBON SAVE sub-menu is used to set the ribbon save mode. In STANDARD mode, a ribbon is used over the full width of the print job as soon as one dot is required in the print pass. No ribbon will be used if no ink is required in the print pass. In ribbon save mode HIGH, no ribbon will be used if no ink is required in the print pass and ribbon will also be saved as soon as no ink is required anymore on the right-hand side of the image.

With ribbon save mode HIGH, the printhead is raised inside the image. This may leave an impression in the vinyl causing print quality issues in the next print passes.

The ribbon save mode can be set by pressing the ► or ◀ key. Then press **2** to confirm. The default setting is STANDARD. On the LCD display, the active setting is marked with an * (asterisk).

2.2.4.3 CALIBRATE MEDIA

Calibrate media is used to optimize the parameters of the OptiTrac sensor. Press the **2** to perform the calibration. The DC3 prints out the pattern below and then cuts out a rectangle. Open the front cover and without moving the media backward or forward, weed the rectangle. Close the front cover and press a key. The rest of the calibration is automatic.



FIG 2-11
CALIBRATE MEDIA TEST

2.2.4.4 CALIBRATE PRINT & CUT

The print and cut cal. test calibrates the position of the cutting head in relation to the printhead. There are two test levels, a basic test and a precision test. Perform the basic test only after major changes to the machine (like changing a printhead, mainboard, etc. Press the **2** key to perform the basic calibration. The DC3 first prints and cuts out a test pattern, and then will prompt the user to weed two rectangles. Open the front cover, and without moving the media backward or forward, weed the two rectangles inside the left and right printed squares. Now close the cover and press a key. The DC3 will now measure the result and perform the calibration automatically.

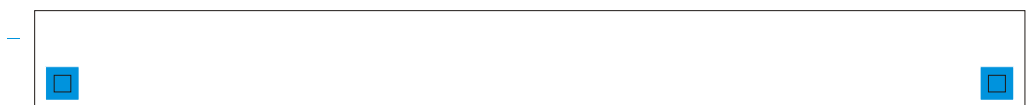


fig 2-8
BASIC PRINT AND CUT TEST PATTERN

CAUTION

Perform the basic test only on 3M white cast vinyl, using cyan as the marker color, for optimal calibration results.

Press the **1** key to perform the precision calibration test. The DC3 first prints and cuts out a test pattern similar to the one below. Weed out the large rectangle, and then search in each set for the small square where the printed lines are not visible. Now insert the values, which correspond to those squares into the DC3 via the control panel.



FIG 2-9
PRECISION PRINT AND CUT TEST PATTERN

2.2.4.5 CALIBRATE OPOS

This test is used to calibrate the physical distance between the marker sensor and the knife tip. Press the **2** key to start the test. The DC3 will cut out three rectangles. After that the machine will prompt the user to weed the three rectangles. Do so and press continue (key **2**). The DC3 will now measure the difference of the reflection level of the backing and the media. Then it will search the edges of the two outer rectangles. If the vinyl is not appropriate for the test, then the DC3 will give a message. Then the test has to redone with a vinyl which has a high contrast between the media and the backing color.

2.2.4.6 CAL. TEMP. SENSORS

This test is used when a printhead is changed. This test is fully automatic after the **2** key is pressed twice.

2.2.4.7 FIRMWARE REVISION

Pressing the **2** key will furnish the details on the DC3's firmware revision. This information is often helpful to technicians when diagnosing problems over the telephone.

2.2.4.8 ROOM TEMPERATURE

Press the **2** key and the DC3 will display the room temperature.

2.2.4.9 COIL SETUP

This test is used to calibrate knife pressure and to set the knife "Landing". After adjustment, the value is saved in the system's memory. To execute this test, a tension gauge of ± 100 gr. and ± 500 gr. is required.

Press the **2** key to enter the test and follow the guidelines on the LCD screen.

CAUTION

Do not perform the coil test when the machine is working properly. Changing the parameters to incorrect values may seriously affect the quality, and may even damage the DC3.

2.2.4.10 SHOW PRINTER USAGE

Pressing the **2** key will furnish the square meter / square feet amount of vinyl carried through the unit during printing. Pressing the **1** key will reset this counter to zero.

2.2.4.11 COPY USER CONFIG.

This menu enables the operator to copy the parameters from one user to another user (see 2.2.1.5 for detail on which parameters). When copying the parameters, the user name is not changed. Press the **2** key to start the copy process. With the **➤** or **➤** key the source user can be chosen. With the **▲** or **▼** key the target user can be chosen. Then press the **2** key to confirm or the **1** key to cancel.

2.2.4.12 PRINT DEMO FILE

On the hard disk of the DC3 there are two demo files. A print and cut file of 800mm by 380mm and a color chart. Press the **2** key to enter the menu. Then with the **▲** or **▼** key choose the demo file. Then press the **2** key to execute. The color chart was made with Corel 11, then exported using the generic CMYK printer profile and then ripped with the screening option set to printer default. Colors might differ slightly when using other settings in either CorelDraw or SummaColorControl.

SECTION 3

3 GENERAL INFORMATION

3.1. MAINTENANCE & CLEANING

The DC3 has a number of sliding surfaces made of smooth metals and plastics. They are virtually friction-free and require no lubrication. They will, however, collect dust and lint, which may affect the performance of the DC3. Keep the DC3 as clean as possible by keeping the front cover always closed. When necessary, clean the unit with a soft cloth dampened with isopropyl alcohol or mild detergent. Do not use abrasive cleaners.




WARNING


The printing surface is made out of a special cellular material. Do not touch it! Cleaning it with any kind of fluid will permanently damage it. Also if pressure is applied to the surface with anything other than the printhead, the printing surface could also be permanently damaged.

3.1.1 CLEANING THE DRIVE SYSTEM

After time and usage, the sleeves of the drive drum may become clogged with accumulated residue from the media liner. This situation may affect traction, as the media will tend to slip between the pinch rollers and the drive sleeves.

➔ To clean the drive sleeves, proceed as follows:

1. Power down the DC3 and remove media and cassettes. Switch it back on.
2. Wait until it is initialized and open the front cover.
3. Cover the front and rear sensor with a piece of paper. Remove the backing from a piece of vinyl. Place the vinyl with the tacky side down between one of the pinch rollers and a drive sleeve
4. Close the cover, press the  key twice, and wait until the machine is ready.

5. Open the cover and press the ▲ or ▼ arrow keys to move the vinyl strip, adhesive side down, back and forth. Be careful not to lose the strip within the machine. Press the  key again to release the pinch rollers.

The figure shows the front sensor covered and the vinyl strip between the pinch roller and the sleeve.

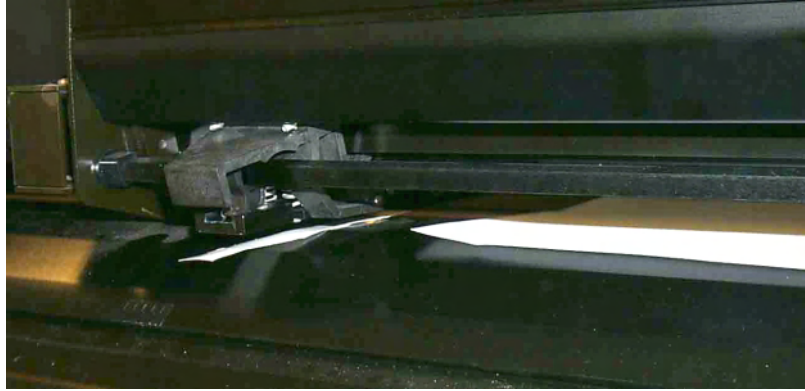


FIGURE 3-1:
CLEANING THE DRIVE SLEEVES

3.1.2 CLEANING THE SENSOR

After a time and usage, the sensor may become dirty with accumulated residue from the media. This situation may cause malfunctioning of the DC3.

➔ To clean the sensor area, proceed as follows:

1. The front sensor is located on the DC3's left side, right next to the pinch roller. The rear sensor is located in the neighborhood of the rear clamp (see figure below).
2. To keep the sensors clean, it is sufficient to wipe them out with a cotton swab.

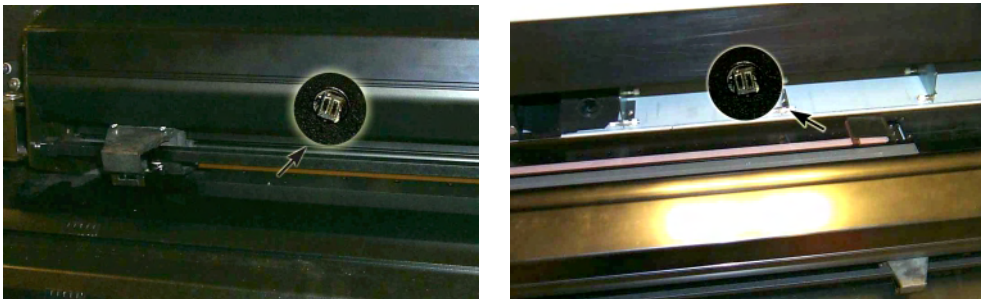


FIG 3-2

Position of the front and rear sensors

3.1.3 CLEANING PAD

Located on the left side of the DC3 is a printhead cleaning pad. The printer cleans the head periodically on this pad. It is possible that after a while some dust will accumulate on this pad. Therefore it is advised to clean this pad from time to time.

➔ To clean the cleaning pad, proceed as follows:

1. Take a piece of scrap vinyl that is a bit larger than the cleaning pad. Remove the backing and stick it on the cleaning pad.
2. Gently apply equal pressure on the vinyl, pressing the adhesive on the pad.
3. Remove the vinyl and check the back of the vinyl. If it is dirty do the procedure again, until the vinyl does not show dirt from the cleaning pad.

If the cleaning pad starts turning white, it is worn out and should be replaced.

NOTE

The cleaning plate should be cleaned every week or after each change of roll vinyl whichever come first.
Every five rolls of vinyl, the cleaning pad should be replaced (or turned once – mark used side so it is not used twice).
Using not approved material can raise the need to perform these actions.
Cleaning pad should be changed if the printhead is changed.

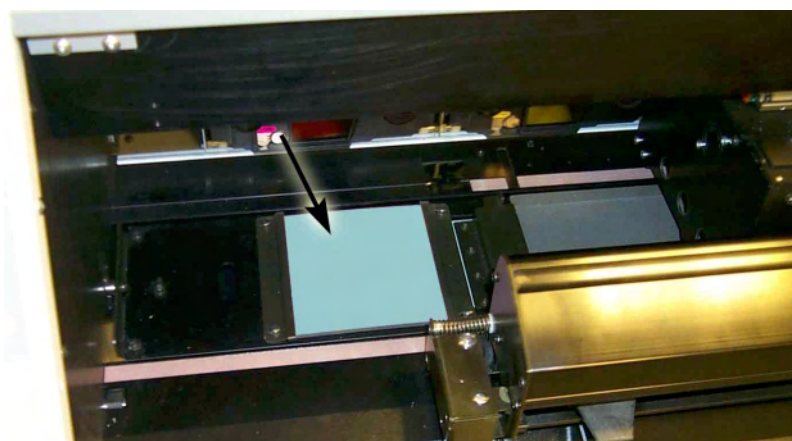


FIG 3-3
CLEANING PAD

3.1.4 CLEANING THE PRINTHEAD

The printhead accumulates dust, debris and resin residue, which can all degrade the print quality. The printer will automatically self-clean the printhead (see section 2.2.2.6. and 3.1.3). While this procedure removes much of the residue and debris, the printhead will sometimes require manual cleaning, particularly after a ribbon breakage because large pieces of ribbon material might be caught underneath the carriage.

Do not clean the printhead just after printing. The printhead is still hot after printing. Touching it too soon after printing might cause injuries.

Do not clean the printhead above the printing surface.

➔ To clean the printhead, proceed as follows:

1. Power off the DC3. Open up the rear cover and take out the cassette.
2. Use a lint free cloth, or gauze, moistened with isopropyl alcohol.
3. Gently wipe the printhead (1), the release plate (2) and the rollers (4).
4. Note the position of the ribbon end sensor (3).

NOTE

Clean the printhead after every change of roll of ribbon.

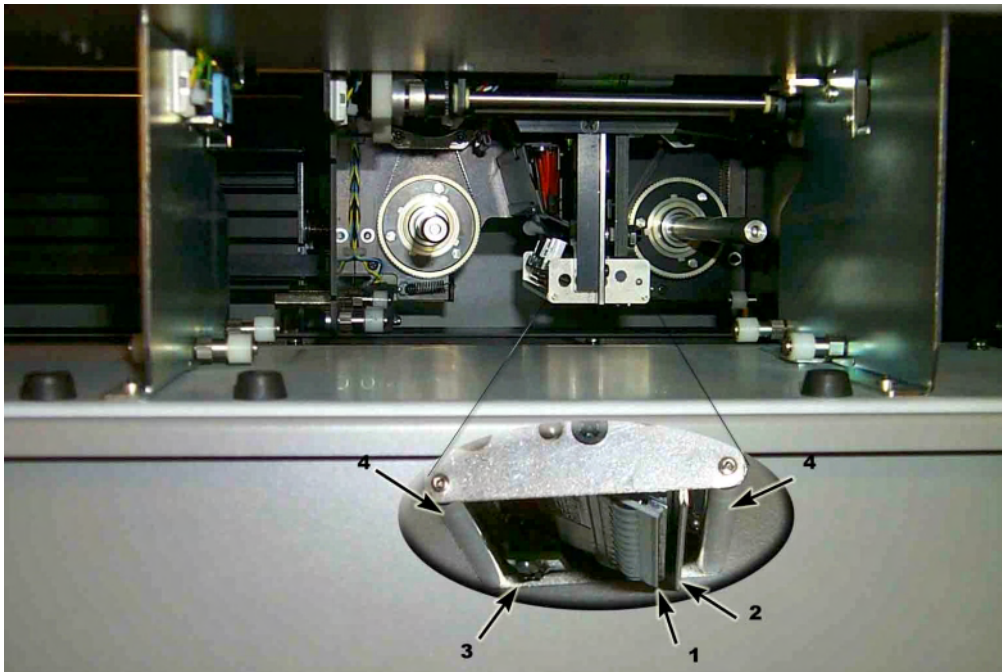


FIG 3-4
CLEANING THE PRINTHEAD

3.1.5 CLEANING THE PRINTING SURFACE

The printing surface is very delicate. It is made out of cellular material. Oil and moisture from fingers damages the surface, therefore great care should be taken when the printing surface is uncovered. **DO NOT TOUCH SURFACE.**

In rare cases it might be necessary to clean the printing surface. It is not recommended to do it, but sometimes it is the only safe way to remove dirt.

➔ To clean the printing surface, proceed as follows:

1. Power off the DC3 and remove the vinyl.
2. Cut a piece of vinyl, the size of the printing surface (1 x 0.14m) and stick it onto the printing surface.
3. Power on the DC3 and load the media. Print out a rectangle full width and height, consisting out of two colors app 20% coverage.
4. Remove the media from the DC3 and turn off the power.
5. Carefully remove the vinyl from the printing surface.

This test has been done with 3M cast white vinyl. Do not attempt to use any other vinyl to clean the printing surface. The reaction of the adhesive on the printing surface might damage it. Do not leave the vinyl on the printing surface longer than is necessary for this test.

3.2. OPERATING VOLTAGE

The power entry module detects the line voltage and switches automatically between 110V and 230V.

The fuse is at the back, next to the power inlet.

The fuse rating is a 4.0A Slo-Blo, for all voltage ratings.



SAFETY WARNING

Before changing the fuse be sure to completely disconnect the DC3.

NOTE

Always make sure that you are using the correct fuse rating.

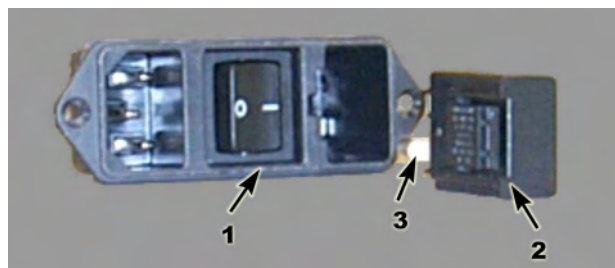


FIGURE 3-5
POWER ENTRY MODULE

1. Power entry module
2. Fuse holder
3. Fuse

SECTION 4

4 INTERFACE

4.1. INTRODUCTION

This section describes the communication interfaces between your DC3 and the host computer.

A Parallel and USB connection is available with DC3. When both ports are connected at the same time, only the port that receives the data first will stay active, and this will deactivate the other port. Switching to the other port to send information can only be achieved when both ports get no data for at least 30 seconds.

4.1.1 PARALLEL INTERFACE

A standard shielded, twisted-pair parallel cable should be used on the parallel port.

The recommended length of the cable should be less than 3 meters (10 ft).

Setting up:

Make sure both the DC3 and the computer are turned off.

Plug the cable connector securely into the DC3's interface connector. Then squeeze the wire clips together, on both sides, until they lock in place.

Plug the other end of the cable into the computer's parallel interface.

4.1.2 USB INTERFACE NOTES

The DC3 has a built-in USB interface and is based on the standards, specified in Universal Serial Bus Specifications Revision 1.1






The recommend cable length is 5 meters (16 ft.) or less.

The adaptable connector type is USB Series "B"

The specifications of the cable should be USB Series A 4-pin for the computer side and USB Series B 4-pin for the DC3 side.

USB is "Hot swappable", which means the connection between the computer and the printer can be established or interrupted without switching of computer or printer. However with Windows 2000, Windows ME and Windows XP, it is advised to first let MS Windows "Unplug the hardware".

➔ To disconnect or switch printers, proceed as follows:

1. Double click on the "Unplug hardware" icon in the system tray .
2. Click on , click on .
3. A new window appears, click on , then click on .
4. Wait for the message, which confirms that it is now safe to unplug the device, then either unplug it or switch it off.

SECTION 5

5 PRINTING SOFTWARE

5.1. SUMMA COLORCONTROL 6

ColorControl is a Windows based program that processes Postscript files ("EPS", "PS", "EPSF" and "PDF" files). ColorControl provides the RIP (Raster Image Processor) to enable the operator to output vector and raster images to the DC3.

Included functions are:

Print to DC3: A high-speed image rasterizer that processes postscript files using a postscript level 3 interpreter.

View ripped files: Allows the operator to view images before printing them.

The RIP retains all aspects of file size, rotation and color depth, which is assigned in the design software.

The program uses a hardware key (Dongle), which attaches to the host computer's port.

5.1.1 INSTALLING SUMMA COLORCONTROL 6 (SCC6)

1. Insert the CD into the computer.
2. The CD should start automatically. If the installation does not begin automatically, launch the routine manually from the "Run" command line in the Windows Start menu. Type "D:\autostart.exe" (where D is the CD-ROM drive).

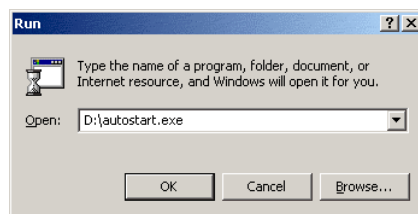


FIG 5-1
START CD MANUALLY

3. Start up screen.




FIG 5-2
INSTALLATION OF SUMMA COLORCONTROL

4. Click on "Setup Color Control ".
5. Then follow the instructions on the screen.

The ColorControl installation procedure is self-explanatory. The driver for the hardware key (dongle) delivered with the program will also need to be installed once the program is first started and prompts the user to install it. Wait to connect the dongle until the driver for it is installed (see next paragraph).

5.1.2 STARTING SUMMA COLORCONTROL (SCC)

Launch ColorControl. If no dongle (HASP) driver has ever been installed on the computer, there will be a warning, the first time the program is launched. Click on  and the following screen will appear (host ID may vary).

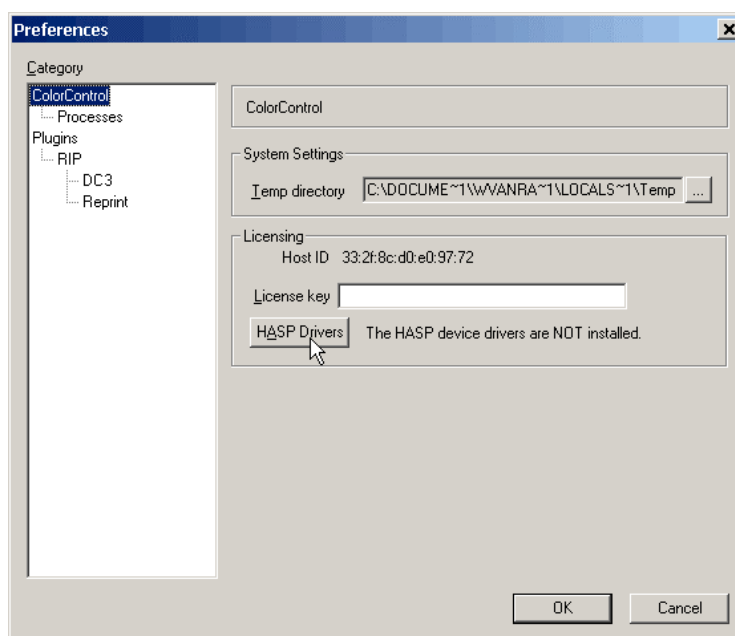







FIG 5-3
FIRST START-UP SCREEN

Click on the  button to install the Hasp drivers for the dongle. A new screen will appear, click on the  button, confirm in the new window by pressing on the  button. Wait until the driver is installed. The driver is installed correctly if a version number is listed next to "HASP version:" Press on the  button and then on the  button.

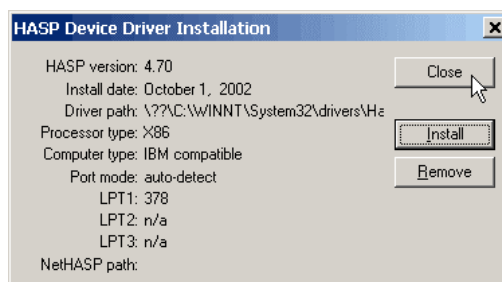


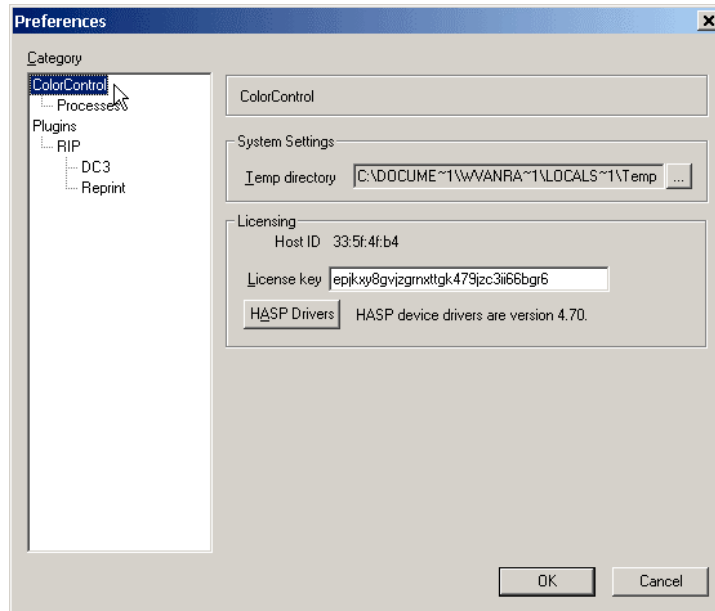
FIG 5-4
HARDWARE KEY (HASP) DRIVER INSTALLATION

Then close Color Control or change the configuration (see next paragraph).

5.1.3 SUMMA COLORCONTROL (SCC) CONFIGURATION

The software is now ready to use, but the operator might wish to adjust certain preferences.

5.1.3.1 COLORCONTROL PREFERENCES



FIF 5-5
COLORCONTROL PREFERENCES

1. Temp directory: Indicates where SCC writes temporary files during processing. SCC uses the default MS Windows temp directory.
2. License key: In this box the dongle license number appears. If this box is blank, then either the HASP drivers are not installed or the dongle is missing, defective or the printer is turned off. **The printer must always be turned on before launching Summa ColorControl.**

5.1.3.2 PROCESS PREFERENCES

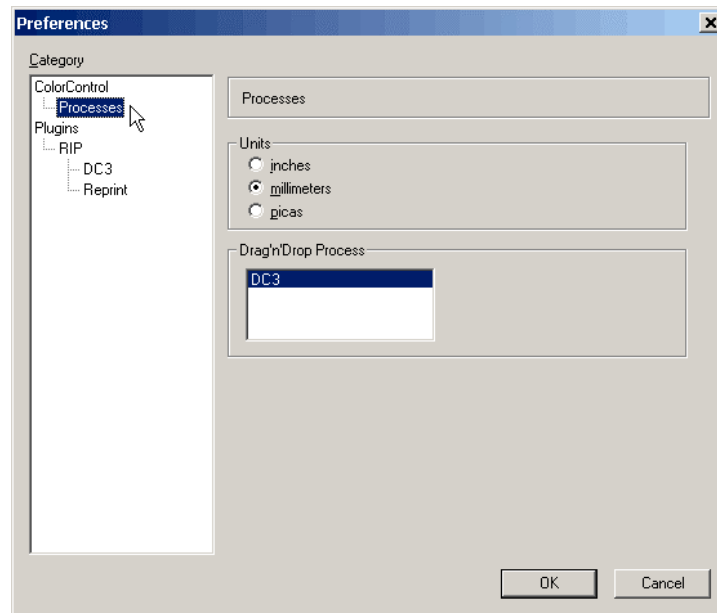


FIG 5-6
PROCESS PREFERENCES

1. Units: sets the units of measurement for pixel resolution, page size and rulers within the preview menu.
2. Drag 'n' Drop RIP: identifies the DC3 printer being used.

5.1.3.3 RIP PREFERENCES

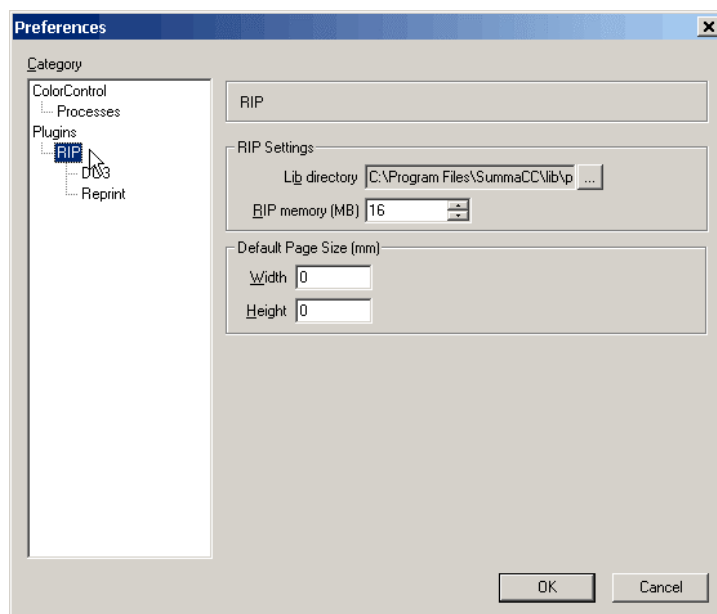


FIG 5-7
RIP PREFERENCES

1. Lib directory: where SCC's library files reside. The default is "C:\Program Files\SummaCC\lib\psrip3". If during an installation the files are stored elsewhere, then change this setting appropriately. If the settings are incorrect, SCC will give a fatal error when ripping.
2. RIP memory (MB): the amount of RAM SCC uses while processing files. The default is the minimum 16MB. The maximum memory used by SCC is 256MB.
3. Default page size: provides the default page size if the imported Postscript file does not contain page size information.

5.1.3.4 DC3 PREFERENCES

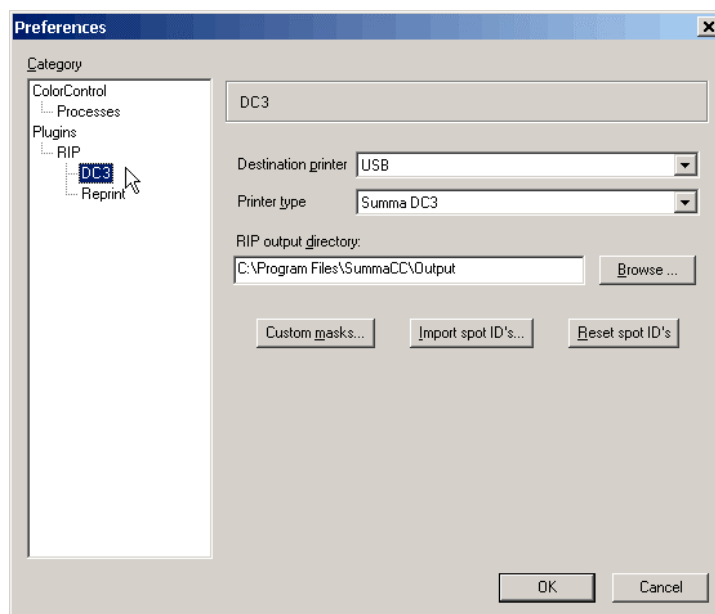


FIG 5-8
DC3 PREFERENCES

1. Destination printer: select the interface port, most commonly used is the USB port.
2. RIP output directory: specify the directory where ripped files will be stored. Please BE VERY CAREFUL and watch this directory as large ripped files can accumulate and fill your computers hard disk quickly.
3. Custom masks: import custom-made masks for the Vision Print feature. It is recommended to use bitmaps with a height that is a multiple of 16 pixels.
4. Import Spot ID's: allows new spot color ID's to be created and imported when a new spot color is released.
5. Reset Spot ID's: resets spot ID's to factory default.

5.1.3.5 REPRINT PREFERENCES

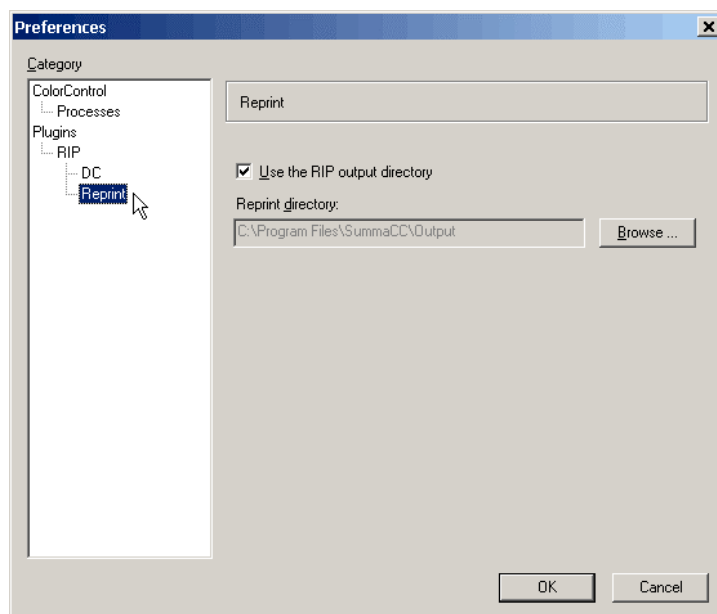



FIG 5-9
REPRINT PREFERENCES

1. Reprint directory: select to use the RIP output directory or choose another location to store ripped files.

If the preferences are set and the hasp driver is installed, then close Summa Color Control. Connect the USB dongle, Windows should immediately recognize the dongle and install the USB driver for it automatically. Wait until it is finished and click on .

5.1.4 HOW TO RIP AND PRINT

To begin, enter the **File** menu and click on **Print to DC3 ...**. In the subsequent dialog boxes, browse to the file that needs to be printed and click on the **Open** button. The print dialog box will appear, there are 5 tabs.

5.1.4.1 GENERAL TAB

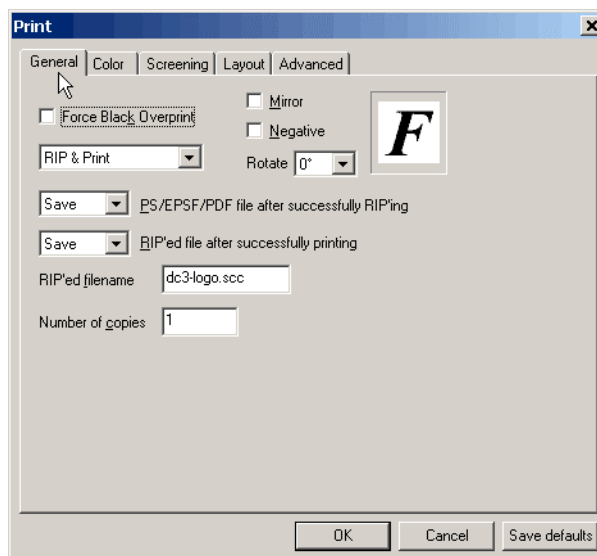


FIG 5-10
GENERAL TAB

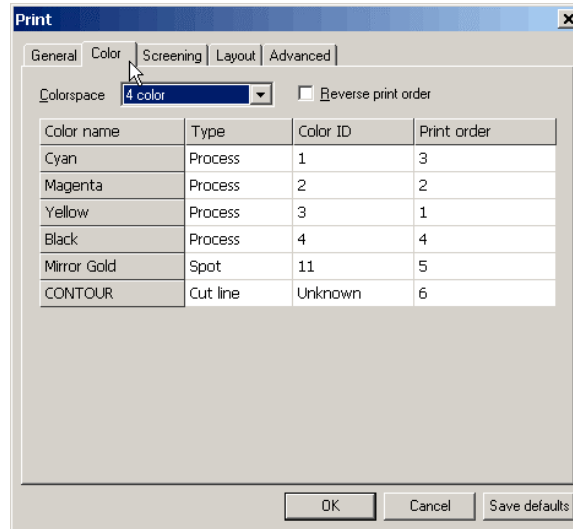
1. **Force Black Overprint**: overprints all black elements, which help to prevent small black text from dropping out the background color.



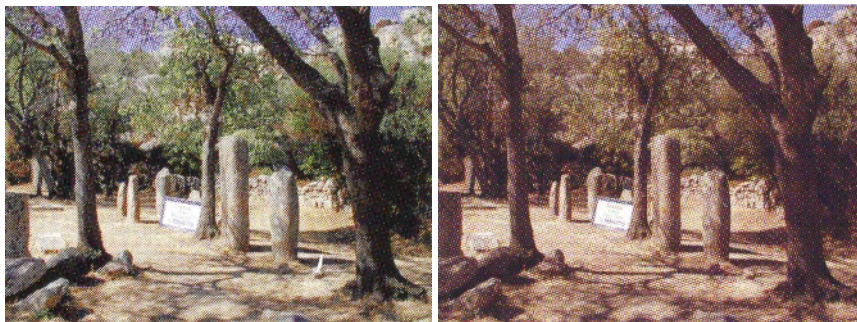
FIG 5-11
FORCE BLACK OVERPRINT ON FORCE BLACK OVERPRINT OFF

2. **Mirror**: reverses the image, which is useful for some backlit and window graphic applications.
3. **Negative**: creates a negative image, which is useful for screen-printing applications.
4. **RIP & Print**: select which operation to perform.
5. **Rotate**: rotates an image 90°, 180° or 270°.
6. **Save PS/EPS/PDF file after successfully Ripping**: Select whether to save or delete the file that has just been ripped.
7. **Save RIP'ed file after printing**: Select whether to save or delete the ripped file, after printing. The location of the ripped files can be set in the preference menu. If this option is set to on, then this subdirectory has to be checked regularly in order not to flood the hard disk.
8. **Number of copies**: specify the number of copies to print.

5.1.4.2 COLOR TAB

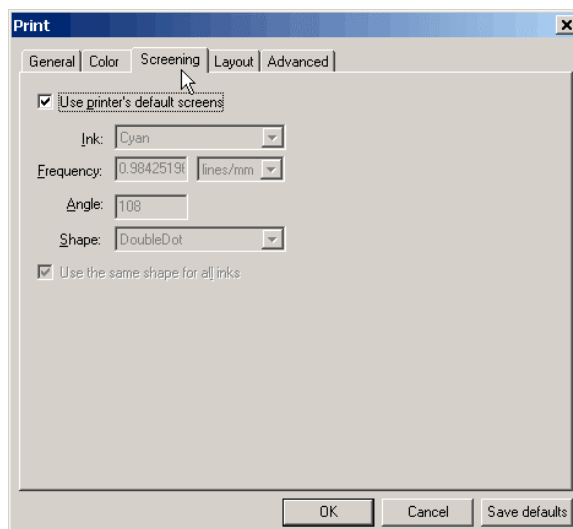
FIG 5-12
COLOR TAB

1. Colorspace: select 3 color (CMY), 4 color (CMYK), Monochrome (Grey scale) or spot color only. Printing in 4 colors is chosen to deepen shadows and to provide a true black. Printing in 3 colors reduces the cost of the output. (See fig below – only visible in color)

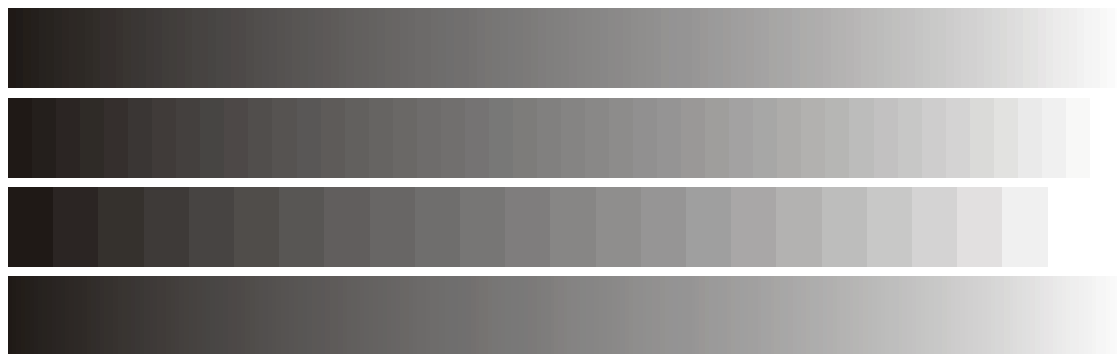
FIG 5-13
PRINTED CMYK PRINTED CMY

2. Reverse print order: reverses the print order. This option is used for reverse backlit applications to preserve the lightest color being printed first. Choosing this option also has as a result that the masking colors are printed last. The best print order is always YMCK.
3. Type: CMYK information in the file will default to "Process". If spot color information is assigned in the design software, then they will appear here as "Spot". The spot colors can be changed to "As process" if the spot color ribbons are not available. The spot color "COUNTOUR" is an exception. SCC will cut out any information in spot color "CONTOUR". There can only be one 'contour color'.
4. Cassette Number: refers to the ribbon ID number. Numbers are assigned automatically if SCC recognizes the color name.
5. Print order: specify the order in which the color planes will be printed. Ideally, process colors always print in YMCK order, lightest color first.

5.1.4.3 SCREENING TAB

FIG 5-14
SCREENING TAB

1. Use printer's default screens: the frequency, angle and dot shape that are specified in the EPS file will be used while ripping and printing. If this box is unchecked, then those parameters can be changed for different effects.
2. Ink: Use the same shape and frequency for all colors, otherwise unexpected patterns will appear in the design.
3. Frequency: The frequency is the 'line frequency' (lpmm or lpi). This parameter determines the size of the cell in which dots are put together to create the colors. Do not confuse this term 'dots per mm' (dpmm or dpi). Dpmm is the resolution of the printer. The DC3 has a resolution of 12 dpmm (304 dpi). The number of shades depends on the relation between dpmm and lpmm (lpi and dpi). The formula is $(dpmm/lpmm)^2$ or $(dpi/lpi)^2$. It is recommended to use only frequencies between 0.8 and 2 lines /mm (20 to 50 lines/inch). Below is an example of printing out a gradient from 100 to 0% black with respectively 1, 1.55, 2.35 lpmm (25, 40 and 60 lpi) and a smooth gradient

FIG 5-15
DIFFERENCE BETWEEN LINE FREQUENCIES

4. Angle: To get various shades to reproduce an image, the RIP uses a process called screening. Screening breaks an image down into series of dots. Each screen is set to a certain angle. Thus creating intersecting rows that form a pattern as dot shapes, know as rosettes. The default angles are carefully chosen in order to minimize the 'moiré' effect. Changing those angles will normally not reduce moiré. Moiré usually emerges in scanned pictures; add noise in the picture to solve the moiré problem.

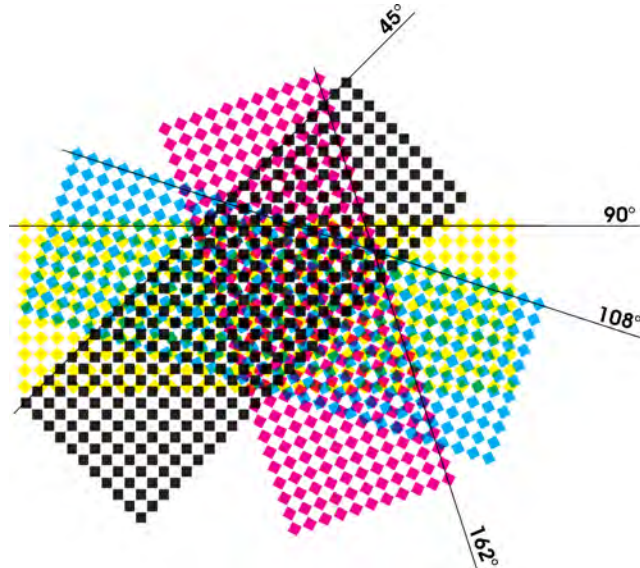


FIG 5-16
SCREEN ANGLES

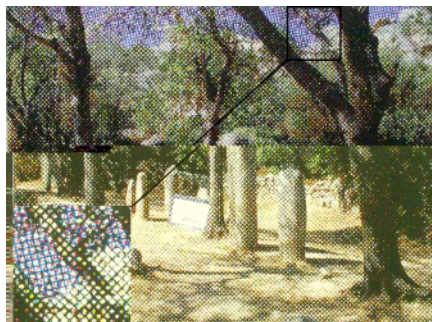
5. Shape: Here the shape of those dots can be chosen. Below is an illustration of the various available dot shapes.



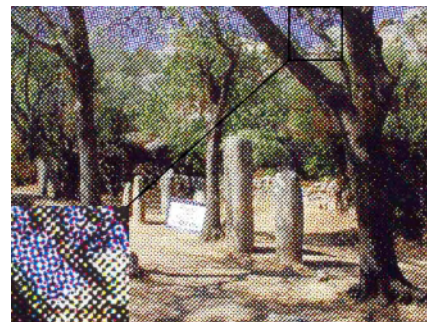
ROUND



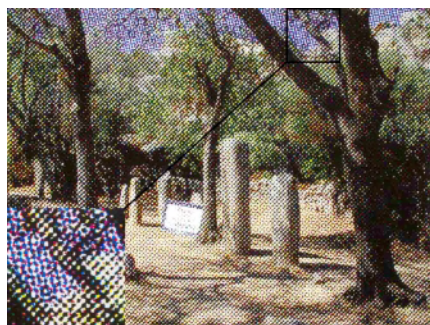
SQUARE



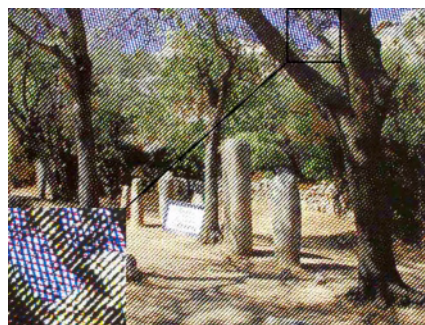
CROSS



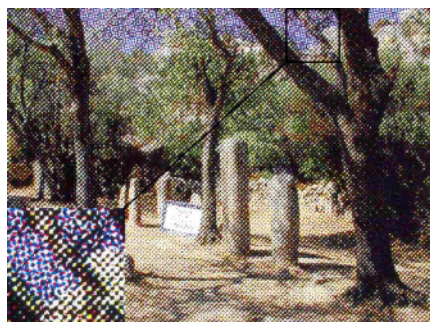
DIAMOND



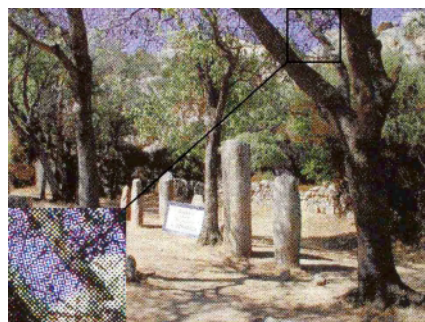
ELLIPSE



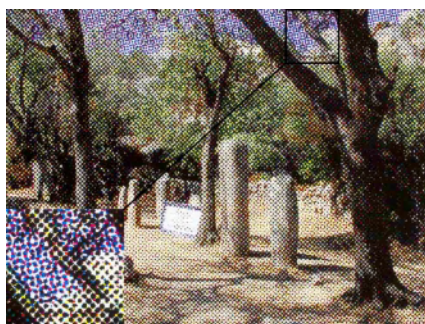
LINE



RHOMBOID



DOUBLE DOT



SINGLE DOT

The shape, shown in the enlarged section, is a result of the combination of postscript pattern and angle and frequency.

Ellipse is the recommended default shape. Rhomboid, Double Dot and other shapes are can be chosen for special effects, but are not generally recommended. Summa cannot guarantee print quality using any shape other than Ellipse.

Tips:

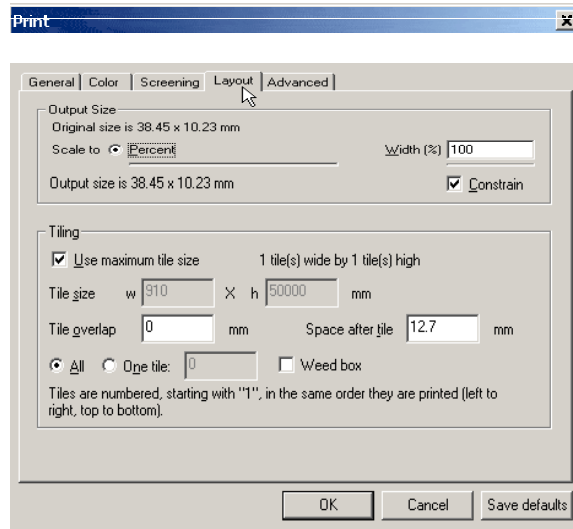
For difficult colors, use Rhomboid 0.8 to 1.1 lines /mm (20 to 30 lines/inch)


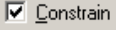
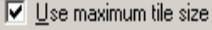
For more steps in gradients, use Double Dot 1 line/mm (25 lines/inch)

A standard setting for mid to large designs is Rhomboid 2 lines/mm (50 lines/inch)

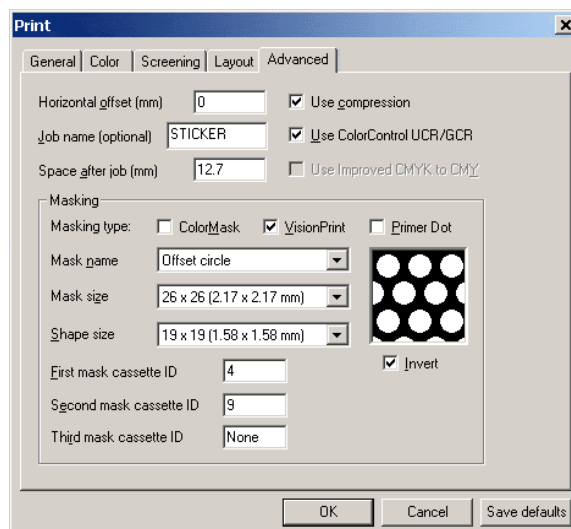
Do Not Use Double Dot with line frequencies higher than 1.3 lines/mm (35 lines/inch), and only for relatively small images (smaller the one band width). **Severe banding can occur when improperly using the Double Dot shape.**

5.1.4.4 LAYOUT TAB

FIG 5-17
LAYOUT TAB

1. Output size: scale the EPS file to any size or specify a page size. To determine the exact output size, click first on , then change to the desired size in the width or height box. Enable  box to constrain the proportions during resizing.
2. Tiling: If the image needs to be tiled, specify the tile size and the amount of overlap between each tile. Check the  box to use the maximum print width. There is also the option to print out each tile separately. If the weed box option is chosen, then the DC3 cuts a border around the print out. This option is grayed out when printing in tiles. If there is print and cut information, in the file, then SCC will automatically cut a border around the design.

5.1.4.5 ADVANCED TAB

FIG 5-18
ADVANCED TAB

1. Horizontal offset: specify the offset from the origin of a normal printout.
2. Job name (optional): specify the name the printer will use in the printer's queue.
3. Space after job: set the required distance between subsequent jobs, This value is ignored by the DC3.
4. Use compression: compresses raw printer data to reduce the time it takes to transfer the data.
5. Use ColorControl UCR/GCR: a process that determines the amount of black ink used to replace CMY in areas where those three inks overlap. (Under Color Removal and Grey Component Replacement). It is highlighted only when working in 4-color mode. (See fig below – only visible in color)

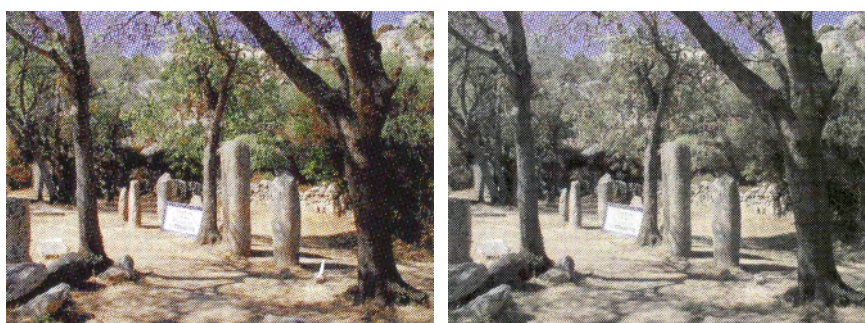


FIG 5-19

PRINTED NO UCR/GCR

PRINTED WITH UCR/GCR

6. Use Improved CMYK to CMY: a choice between two different embedded color profile tables. Used when CMY images appear too dark.

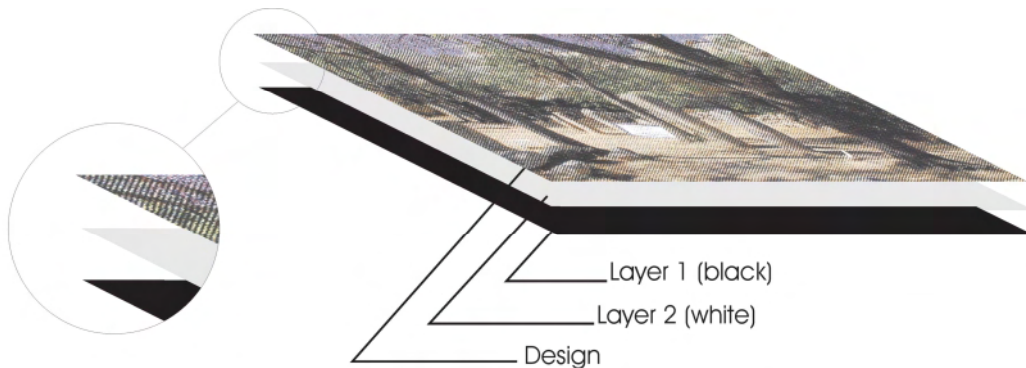


FIG 5-20

IMPROVED CMYK TO CMY

NO IMPROVED CMYK TO CMY

7. Masking is an option to print color layers underneath other colors. Commonly used for printing on clear vinyl. Choose between ColorMask (complete coverage), Primer dot (printed dot on dot, or pixel on pixel) and VisionPrint (perforated hole patterns). The patterns in VisionPrint can be chosen with 'Mask name'. The size of the pattern can be changed with 'Mask size' and 'Shape size'. The small window next to the shape option, displays the pattern that will be printed out. The black area indicates area to be printed and the white area indicates what will not be printed. There is a choice of one, two or three masking layers. Fill in the cassettes numbers for selected layers as needed.

FIG 5-21
MASKING

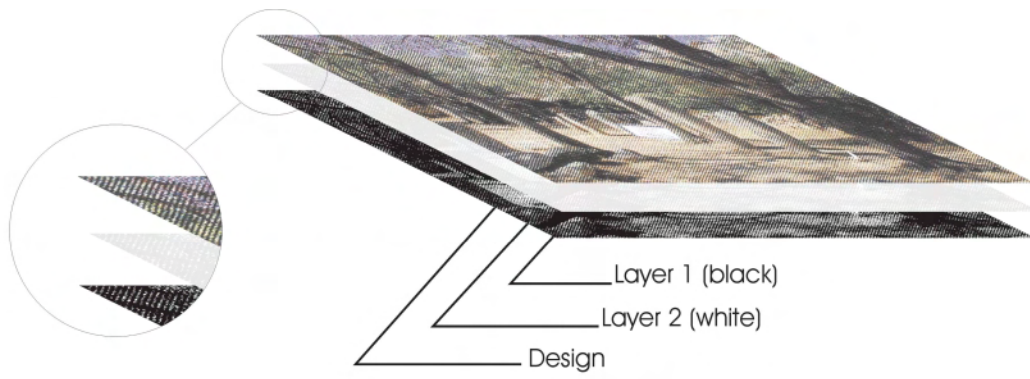


FIG 5-22
PRIMER DOT

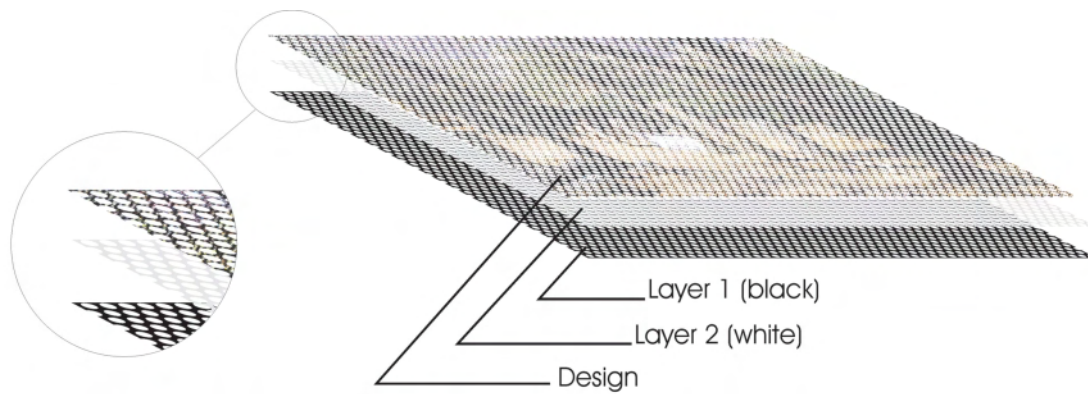


FIG 5-23
VISION PRINT

5.2. PALETTE INSTALLER

This program installs a custom ColorControl spot color palette for Adobe Illustrator, CorelDraw or Macromedia Freehand. The spot colors in this palette have unique names, which ColorControl can recognize.

5.2.1 LAUNCHING PALETTE INSTALLER

8. Insert the CD into the computer.
9. The CD should start automatically. If the installation does not begin automatically, launch the routine manually from the "Run" command line in the Windows Start menu. Type "D:\autostart.exe" (where D is the CD-ROM drive).

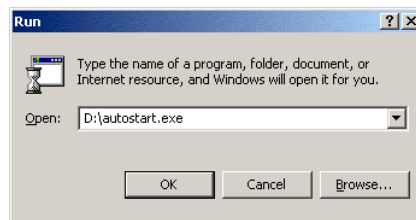


FIG 5-24
START CD MANUALLY

10. Start up screen.

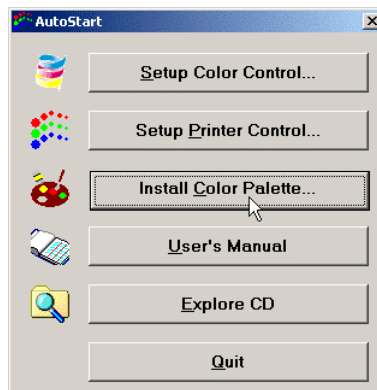



FIG 5-25
INSTALLATION OF PALETTE

11. Click on "Install Color Palette ".
12. Then follow the instructions on the screen.
13. The program launches and looks for installed versions of Adobe Illustrator, CorelDraw or Macromedia Freehand. Click on the button  and the palettes will be installed automatically.

5.3. SUMMA PRINTER CONTROL

The Summa Printer Control Program for MS Windows is a software utility to optimize the overall printing and cutting capabilities of the DC3.

The Summa Printer Control program basically has the same functions as the control panel. It is up to the user to decide which way he will work most efficiently. The users who will work with the Summa Printer Control program will notice that it is a very powerful and practical tool.

5.3.1 INSTALLING SUMMA PRINTER CONTROL

1. Insert the CD into the computer.
2. The CD should start automatically. If the installation does not begin automatically, launch the routine manually from the "Run" command line in the Windows Start menu. Type "D:\autostart.exe" (where D is the CD-ROM drive).

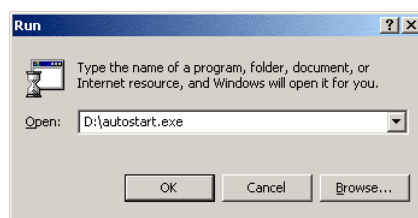


FIG 5-26
START CD MANUALLY

3. Start up screen.

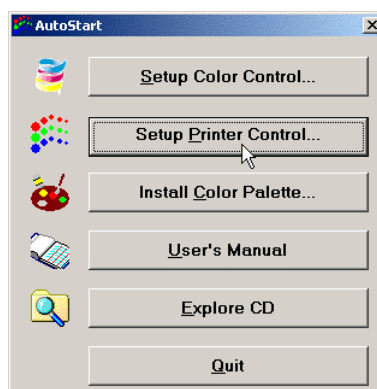


FIG 5-27
INSTALLATION OF SUMMA PRINTER CONTROL

4. Click on "Setup Printer Control ".
5. Then follow the instruction on the screen.

5.3.2 SUMMA PRINTER CONTROL MENUS

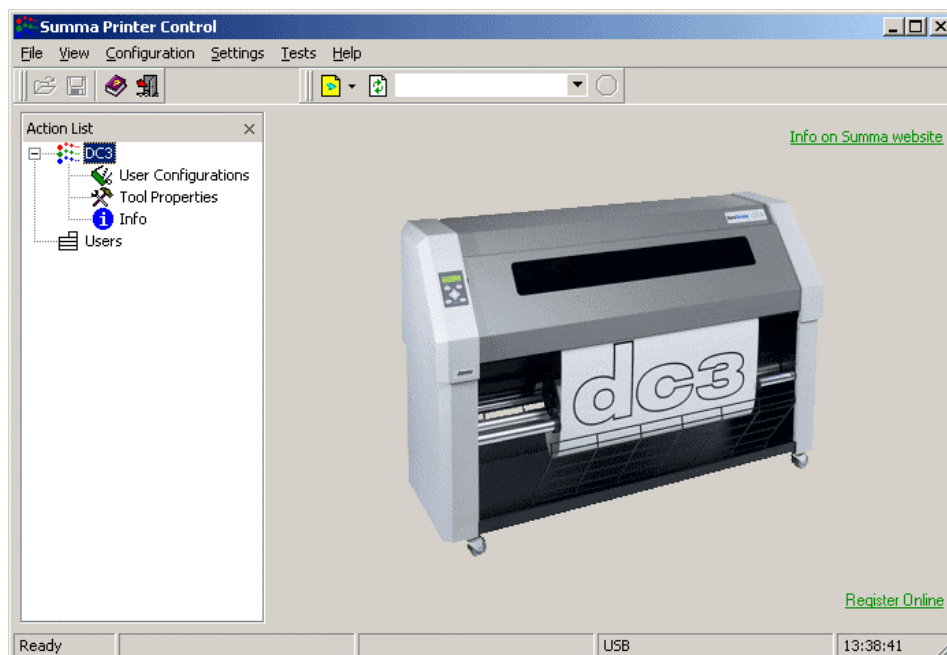
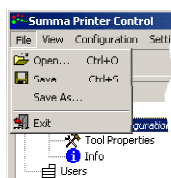


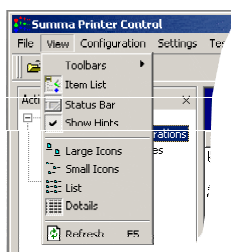
FIG 5-28
SUMMA PRINTER CONTROL START SCREEN

5.3.2.1 FILE MENU



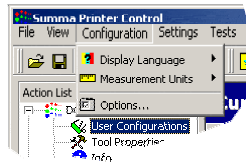
With the file menu, configuration settings can be save on the computer and loaded from its hard disk. The options are only highlighted if a connection between the DC3 and the computer has been established. The last item in this menu will exit the program.

5.3.2.2 VIEW MENU



With the view menu, the appearance of the program can be changed. Some options are only highlighted if a connection between the DC3 and the computer has been established.

5.3.2.3 CONFIGURATION MENU



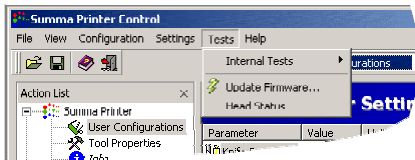
With the configuration menu, the language and units of measurement, which Summa Printer control uses, can be changed.

5.3.2.4 SETTINGS MENU



The settings menu can be used to display certain DC3 parameters on your computer. These parameters can be changed and saved on the computer hard disk, and also in DC3's memory.

5.3.2.5 TESTS MENU



The test menu is used for starting internal DC3 tests, updating the DC3 firmware and to check how many prints the printhead has printed.

5.3.3 ACTION LIST

With the action list, or the setting menu, DC3's parameter settings can be displayed on the computer.

5.3.3.1 CONFIGURATION SETTINGS

Below is a screen capture of the parameters that can be changed using Summa Printer Control. An explanation of these parameters is located in section 2.2. When a parameter is changed, then the parameter and the value are displayed in bold on the computer and the cancel and apply button are highlighted. Click on 'apply' to send the new value to the DC3.

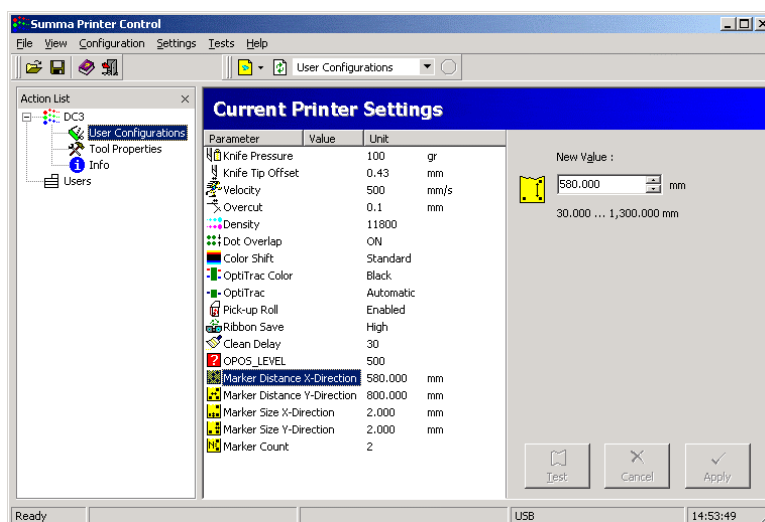


FIG 5-29
CONFIGURATION SETTINGS

5.3.3.2 TOOL PROPERTIES

The tool properties are typical parameters used for the contour cutting knife blade.

The coil settings are for service use only.

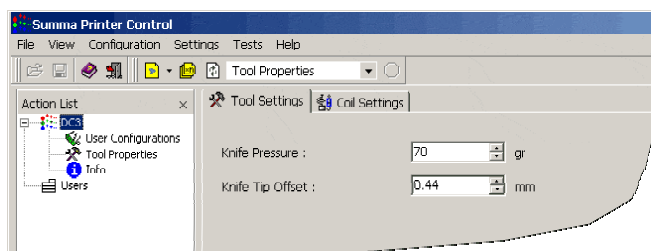
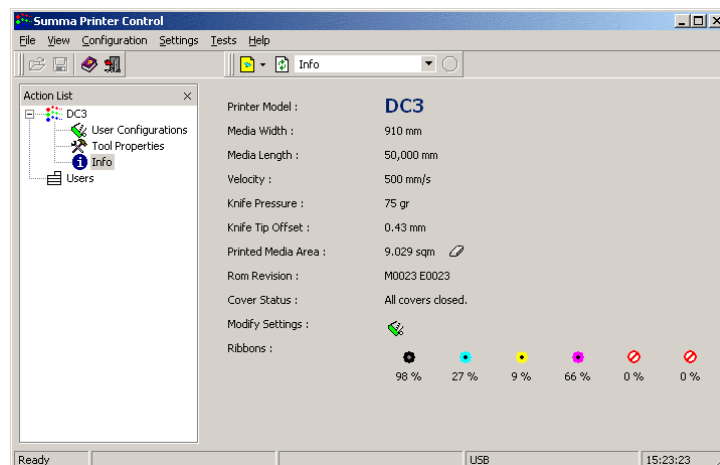


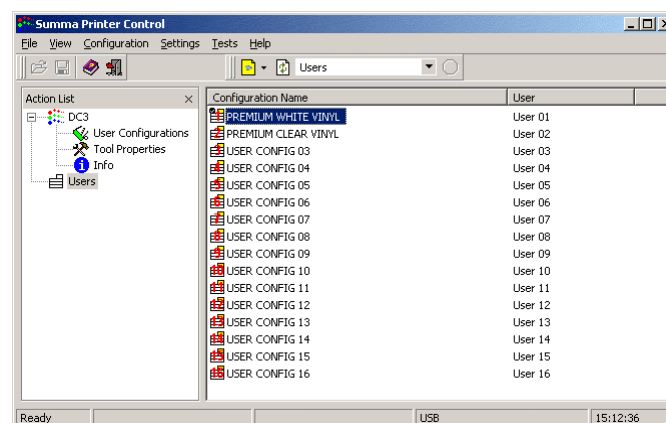
FIG 5-30
TOOL PROPERTIES

5.3.3.3 INFO

FIG 5-31
INFO

Info gives the operator the most important parameters at a glance. The printed media area can be set to zero with the eraser tool right next to it.

5.3.3.4 USERS

FIG 5-32
INFO

With this the operator can change the active user and also change the user name. By default user 01 and user 02 are factory set for premium cast white and premium clear vinyl. Click right on the user to show the parameters of that user, set active or change the name of that user.

SECTION 6

6 OPOS

6.1 INTRODUCTION

The DC3 has an accurate Optical Positioning System. This can be used when it is impossible to contour-cut right after the printing. For instance when the design has to be laminated and then cut afterwards. OPOS is based on the principle of registering black or cyan printed squares around the design. The registration of those markers is done by a sensor on the front of the printer carriage (same sensor that is used for the optitrac system). To be sure that OPOS works accurately, the distance between the sensor and the knife tip must be calibrated (see section 2.2.4.5)

6.2 MAKING AND PRINTING THE DESIGN

The orientation shown in this figures is as it will be seen on the computerscreen when the design is created. When the design is exported and printed out wit SCC, then orientation on the printer is rotated by 180%.

1. Create the design and contour line. For easier handling, place the contour lines on a different layer (they will have to be cut out afterwards).

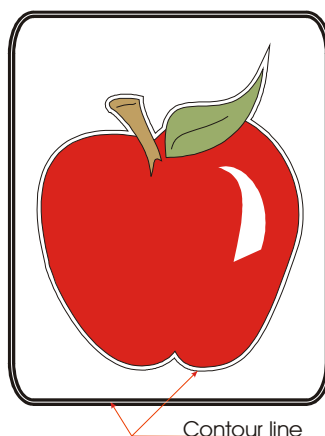


FIG 6-1
DESIGN WITH CONTOUR

- When defining contours, do not define them right on the border of the design. It is advised to leave either a white space between the contour and the design, or to define the contour inside a thick outline. Or better yet, just inside the design. If the contour is designed right on the edge of the drawing, then the slightest misalignment will result in a bad result.

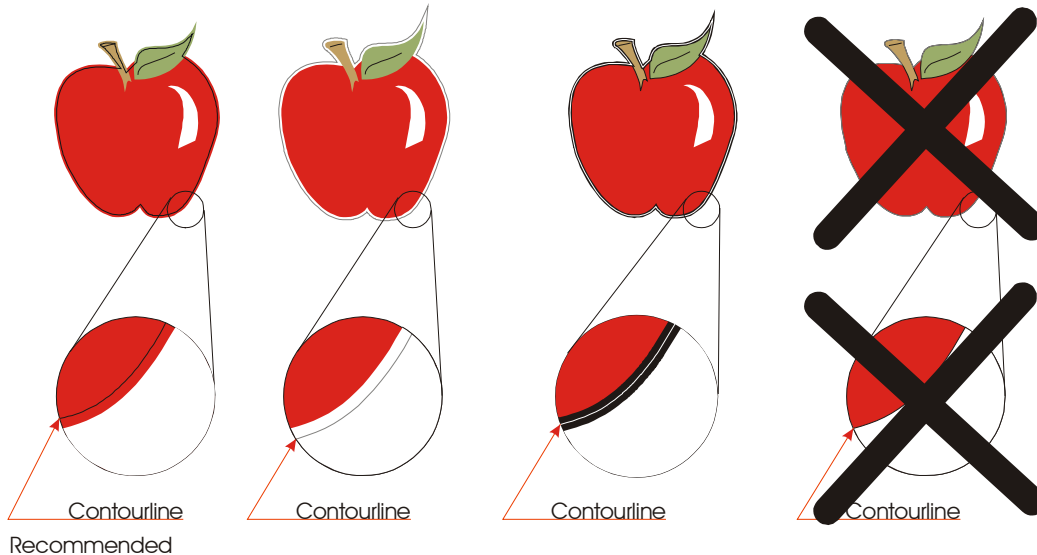


FIG 6-2
ADVISED PLACES FOR CONTOUR PLACEMENT

- Place all the contour objects on a different layer.
- Put the OPOS markers around the drawing. In your design the top right corner is the origin of the design that will be printed out.

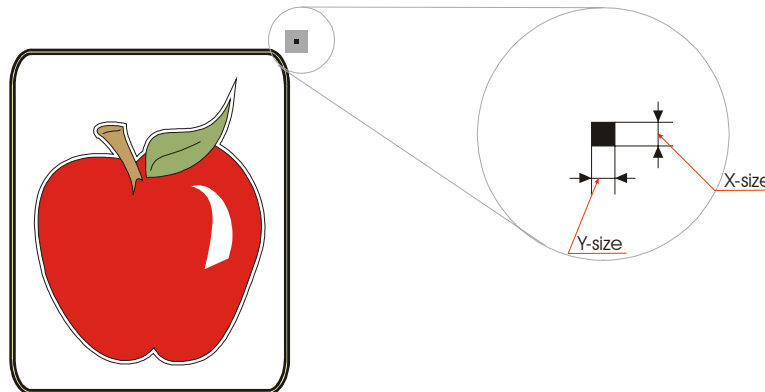


FIG 6-3
PLACEMENT OF THE FIRST MARKER

- The marker must be a rectangle that has sizes which are exactly known. The advised size is 3mm and the line style of the marker is best set to none (line styles with a certain thickness affect the precision).
- Make sure that around every marker a 'white space' which is 3-4 times the size of the marker.
- Make sure that the origin marker is situated at the right side and above all contours that need to be cut.
- Remember the marker size, its value will have to send in a later step of the procedure to the DC3.

4. Place the markers.

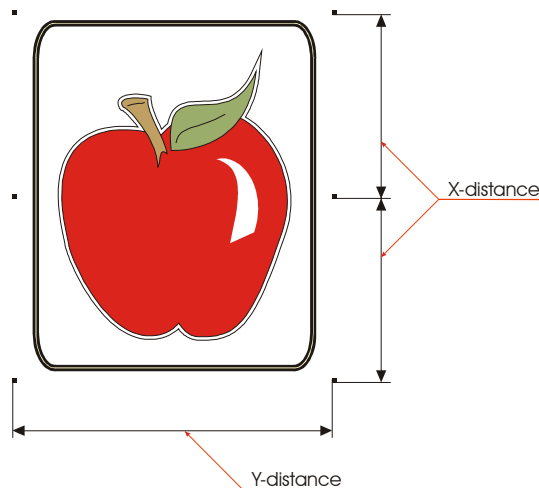


FIG 6-4
PLACEMENT OF THE REST OF THE MARKERS

- Place copies of the original marker at a regular distance in the X-direction. The last marker at the bottom must be under all contours that need be cut.
- Make sure there is enough white space around every marker.
- The advised X-distance depends on several items. Normally 30 to 40 cm is a satisfying distance.
 - If the marker size is smaller then 3mm lower the X-distance.
 - If the white margin is critical, lower the X-distance.
 - The bigger the distance between the markers, the faster the registration of the marks works. The smaller the distance between the markers, the more accurate OPOS works, however the influence on the accuracy is rather small.
- The exact distance between the markers must be known. **Do not measure the distance on the print-out, measure the distance in the design software.** The exact distance is the distance from the lower left corner of one marker to the lower left corner of the marker just underneath it.
- Remember the X-distance and the number of markers in the X-axis, these values will have to be sent to the DC3 in a later stadium.
- Make a copy of the row of markers indicating the X-axis and place them left to the design.
 - Make sure the rows are not shifted.
 - The exact distance between the markers must be known. **Do not measure the distance on the print-out, measure the distance in the design software.** The exact distance is the distance from the lower left corner of one marker to the lower left corner of the marker just underneath it.
- Remember the Y-distance, this value will have to be sent to the DC3 in a later stadium.

5. Print the design.
 - Make the layer on which the contour lines are invisible and not printable.
 - Print the markers and the design on the DC3. Make sure not to scale the design any more.
 - When printing make sure not to rotate the design any more and leave at least 30cm after the design.
 - It is advised to group the jobs on a roll, since with each sheet there needs to be rear margin of +/- 30cm.
 - Leave the front edge also to the design

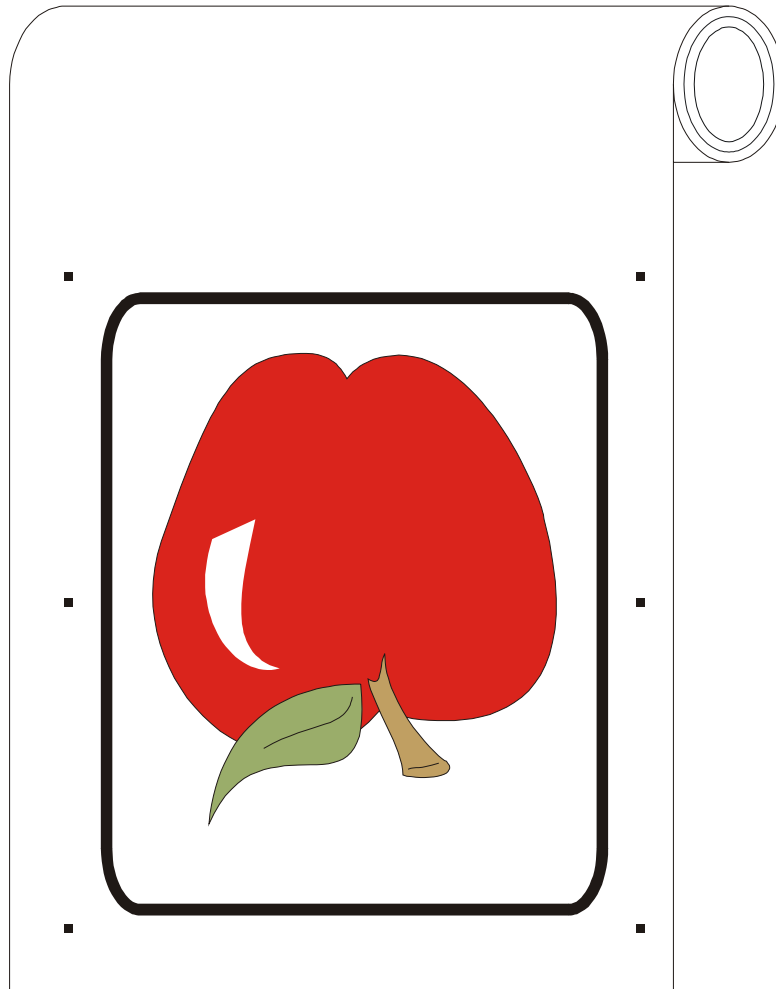


FIG 6-5
PRINTED DESIGN

6.3 SETTING THE PARAMETERS AND LOADING TO CUT

After the 5 steps explained in the paragraph above, the design is ready to apply the extra procedure (like laminatin) to it. The rest of this paragraph describes what then needs to be done to cut the contours.

- Load the media in the DC3 as described in section 1. Make sure it is loaded in the same orientation as it came out of the DC3
- Start Summa Printer Control

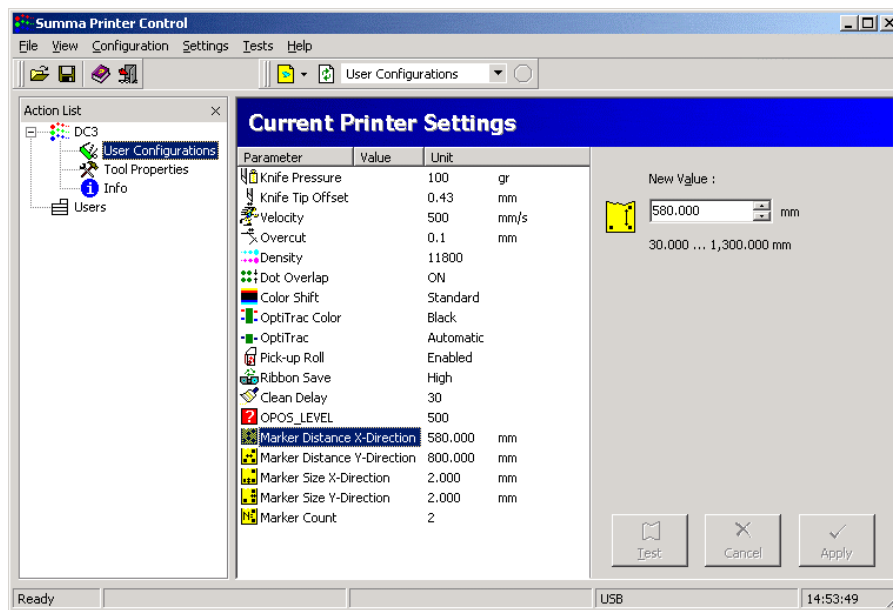


FIG 6-6
START SCREEN SPC

- Change the 5 Opos parameter to the values that were used in section 6.2 step 4. The marker distance X-direction, the marker distance y-direction, the marker size X-direction, the marker size Y-direction and the marker count (number of markers in the X-direction). Send those values to the DC3.
- Registrare the markers. To registrate the markers, enter the cutter menu.
- Look for 'LOAD OPOS MARKERS' in the cutter menu and press 'ENTER'.
- The DC3 will prompt the user to put the knife tip above the first marker. If all previous steps were followed, then this means that the first marker is in the lower left corner of the design that was just loaded in the DC3. Do so and press 'ENTER'. Wait until the DC3 has read all the markers.

6.4 CUTTING THE CONTOUR

- Make the layer on which the contour lines are visible and printable. Do the opposite with the print data.
- Make sure that the origin marker (top right) is also defined as a contour. This will be used as the origin for the cutting.
- If SCC is used to send the cutting data to the DC3, then leave the contour design in its original position. If another driver is used to send the data to the DC3, then rotate the contour design 180° and make sure that the origin marker is in the origin.

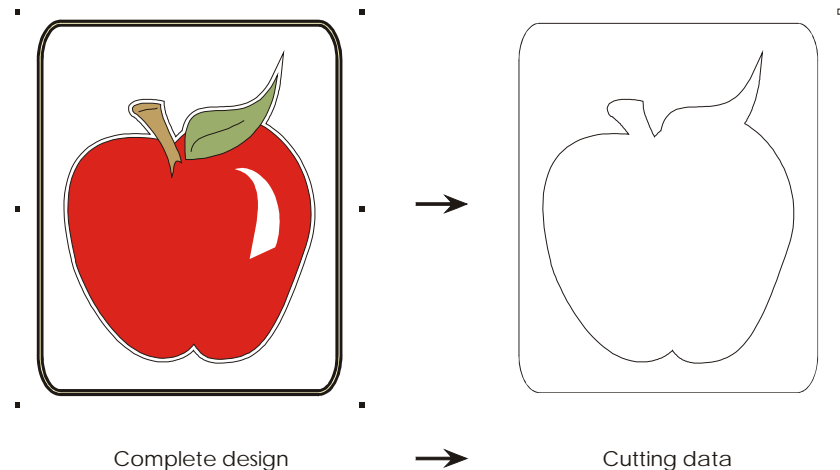


FIG 6-7

SELECTING CUT DATA