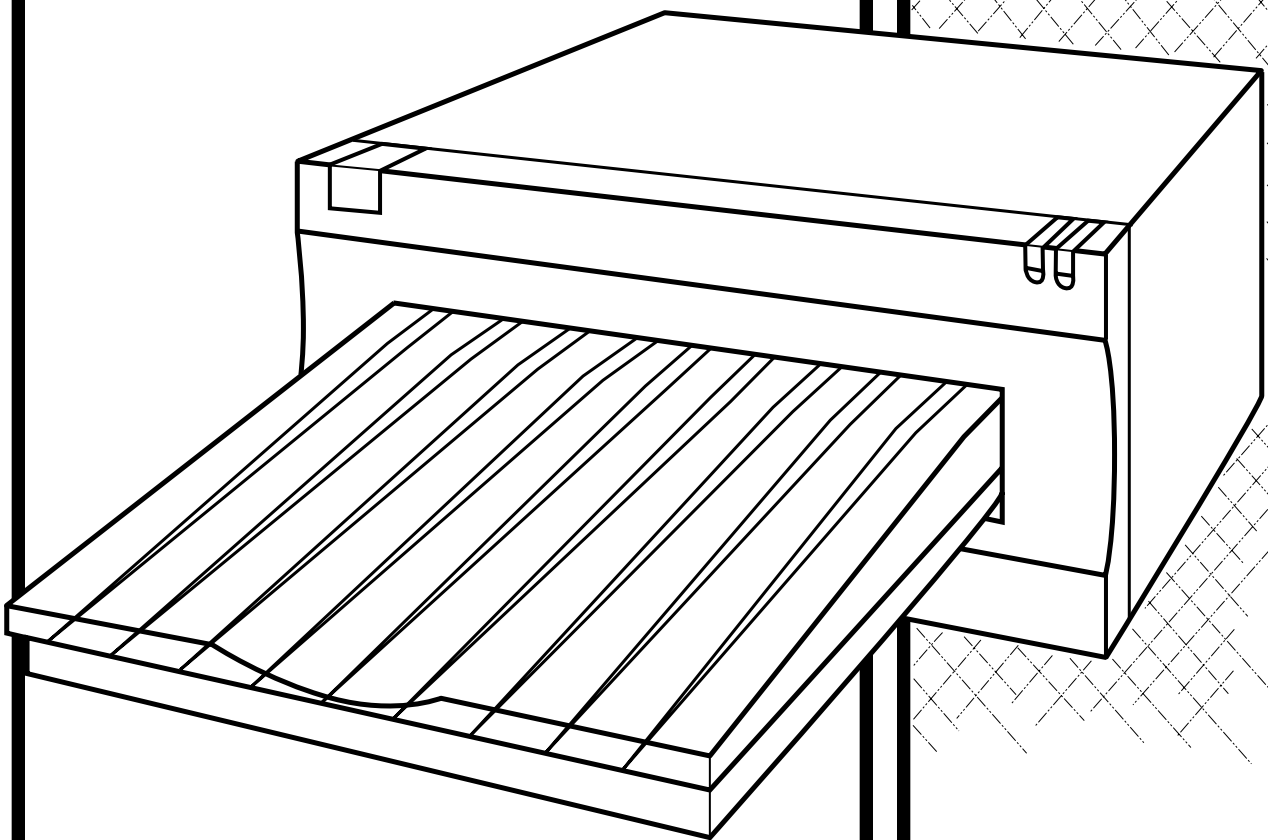


Color Sign Printer

User's Manual



Notices

The information in this document is subject to change without notice.

THE PRINTER MANUFACTURER MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The printer manufacturer shall not be liable for errors contained herein or for incidental damages in connection with the furnishing, performance, or use of this material.

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The Color Sign Printer has had the following patents issued:

5,378,072
5,480,242

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Printing History

Edition 1.0, #970724

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For Users in the United States:

This equipment 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Use of a shielded cable is required to comply with the Class A limits of Part 15 of the FCC Rules.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate and/or obtain warranty service for this equipment.

For Users in Canada:

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

Le present appareil numerique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Reglement sur le brouillage radioélectrique edicte par le ministere des Communications du Canada.

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A. How Your Color Sign Printer Works

The Color Sign Printer utilizes two different, yet closely related printing technologies to achieve its remarkable output — thermal transfer and dye-sublimation.

Thermal Transfer

Thermal transfer is a process which uses either a resin-based or a wax-based ribbon roll as a carrier for transferring color to either ribbons' appropriate type of print media (see Section 4 for more information on these ribbons and the appropriate print media for each). Such ribbons are available in single spot colors and/or in a paneled form which includes each of the yellow, magenta, and cyan process colors on the same ribbon roll. By providing each of the process colors, paneled ribbons allow you to conveniently produce full-color images automatically, from a single ribbon.

As the ribbon and print media pass simultaneously beneath the Color Sign Printer's printhead, thousands of thermal elements within the printhead melt the colored inks, thus transferring thousands of tiny colored dots from the ribbon onto the print media. If using a paneled ribbon, the print media automatically makes a separate pass for each colored panel on the ribbon. By combining different colored dots from each ribbon panel in different combinations (this process is called "dithering"), the Color Sign Printer is able to print up to 16.7 million colors.

Dye-Sublimation

Dye-sublimation is similar to thermal transfer in that it still involves a paneled, multi-pass process beneath the same thermal printhead. The difference, however, lies within the special dye-sublimation ribbon and print media and in the transfer process itself.

Unlike a thermal transfer ribbon, each colored panel on a dye-sublimation ribbon is composed of a colored dye rather than a colored ink. When the dyes on the ribbon are heated beneath the thermal printhead, they vaporize and diffuse into the surface of the special dye-receptive print media. By varying the heat intensity of each thermal element within the printhead, the Color Sign Printer is able to change the value and hue of each transferred dot of color. This results in the blending of one colored dot into the next, producing continuous-tone, photo-realistic, color-accurate images with no dithering.

1

Introduction

Thank you for choosing the Color Sign Printer. The Color Sign Printer has been designed to provide you with stunning, high-quality color output on outdoor-durable vinyl, paper, transparency film or even T-shirt transfer paper. It offers many features which make printing full-color signs, labels, decals, proofs, layouts, and heat transfers very fast, easy and exciting.

B. Special Features

With its dual function thermal transfer/dye-sublimation color printing capability, the Color Sign Printer offers you incredible printing versatility. Its wax thermal transfer mode delivers fast, inexpensive color output or proofs on paper stock, while its resin thermal transfer mode prints outdoor-durable labels, signs, and decals on long-lasting vinyl print media. And with its dye-sublimation mode, you get continuous-tone, photo-quality output no other color printing technology can match.

Switching back and forth between these printing methods is easy. All you do is load either the thermal transfer ribbon with the appropriate print media or the dye-sublimation ribbon with its print media, and select the appropriate printing choice from within the included software printer driver. The entire change-over process only takes about 15 to 20 seconds.

And, best of all, operation is simple and straight forward. The Color Sign Printer will print from any IBM-PC® or compatible running Windows® 3.1x/Windows 95 or any Macintosh®/PowerPC™ which has system software 7.0 or higher, a Geo-compatible serial port, and which supports Color QuickDraw™. This means that you can use the printer with virtually any software package running under these operating environments without any special set-up or configuration beyond the initial installation of the specific software driver and interface cable.

To begin using the Color Sign Printer, please refer to the remainder of this manual. This User's Manual is your complete step-by-step guide to setting up and printing with your powerful, new Color Sign Printer.

Before operating the unit, please read the following safety precautions carefully.

Warnings

CAUTION!

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE FRONT, TOP, SIDE, OR REAR PANELS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

- Operate the unit only on 120 VAC, 60 Hz, if operating within the United States or Canada. For printers that have been shipped outside of the United States and Canada, operate the unit only on 230/250 VAC. If you have any doubt as to whether you have a unit with the correct voltage rating for your country's power supply, **DO NOT ATTEMPT TO USE THE UNIT**. Contact your dealer or the factory.
- Stop operation immediately if any liquid or solid object should fall into the cabinet. Unplug the unit and have it checked by qualified service personnel.
- Do not disassemble the cabinet. Refer servicing only to qualified personnel.

Vor Inbetriebnahme bitte die folgenden Sicherheitsmaßnahmen beachten.

Sicherheitshinweise

VORSICHT!

ZUR VERHÜTUNG VON FEUERGEFAHR ODER STROMSCHLÄGEN DAS GERÄT VOR REGEN ODER FEUCHTIGKEIT SCHÜTZEN. UM DIE GEFAHR VON STROMSCHLÄGEN ZU VERHINDERN, KEINE GERÄTEABDECKUNGEN ABNEHMEN. DAS GERÄT ENTHÄLT KEINE TEILE, DIE VOM BENUTZER GEWARTET WERDEN KÖNNEN. WARTUNGSARBEITEN DÜRFEN NUR VON QUALIFIZIERTEM FACHPERSONAL DURCHGEFÜHRT WERDEN.

- Innerhalb der USA und Kanada das Gerät nur mit 120 V Wechselstrom und 60 Hz betreiben. Drucker, die außerhalb der USA oder Kanada verwendet werden, dürfen nur mit 230/250 V Wechselstrom betrieben werden. Wenn Sie nicht sicher sind, ob Ihr Gerät für die in Ihrem Land verwendete Nennspannung ausgelegt ist, **DAS GERÄT NICHT IN BETRIEB NEHMEN**. Wenden Sie sich in diesem Fall an Ihren Händler oder den Hersteller des Gerätes.
- Den Betrieb sofort unterbrechen, wenn ein Gegenstand in das Gehäuse gefallen oder Flüssigkeit eingedrungen ist. Den Netzstecker ziehen und das Gerät von qualifiziertem Wartungspersonal überprüfen lassen.
- Keine Gehäuseteile abnehmen. Wartungsarbeiten nur von qualifiziertem Fachpersonal durchführen lassen.

2

Safety Precautions

Sicherheitsmaßnahmen

Consignes de sécurité

Avant d'utiliser l'appareil, prière de lire attentivement les consignes de sécurité suivantes.

Avertissements

ATTENTION !

POUR EVITER TOUT RISQUE D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A LA PLUIE OU A L'HUMIDITE. POUR EVITER TOUTE DECHARGE ELECTRIQUE, NE PAS RETIRER LES PANNEAUX AVANT, SUPERIEUR, LATERAUX OU ARRIERE. NE PAS TENTER DE REPARER SOI-MEME LES PIECES A L'INTERIEUR DE L'APPAREIL. CONFIER L'ENTRETIEN DE L'APPAREIL A UN PERSONNEL QUALIFIE.

- Faire fonctionner l'appareil uniquement sur courant alternatif de 120 V, 60 Hz aux Etats-Unis ou au Canada. Pour les imprimantes expédiées en-dehors des Etats-Unis et du Canada, faire fonctionner l'appareil uniquement sur courant alternatif de 230/250 V. En cas de doute sur la tension nominale du bloc d'alimentation local, **NE PAS TENTER D'UTILISER L'APPAREIL.** Contacter le distributeur ou l'usine.
- Arrêter immédiatement le fonctionnement si un liquide ou un solide venait à s'infiltrer à l'intérieur de l'armoire. Débrancher l'appareil et le faire vérifier par un personnel qualifié.
- Ne pas démonter l'armoire. Confier l'entretien de l'appareil à un personnel qualifié.

Precauciones de seguridad

Antes de operar la unidad, por favor, lea detenidamente las siguientes precauciones de seguridad.

Advertencias

¡PRECAUCION!

PARA EVITAR PELIGROS DE INCENDIO O CHOQUE ELECTRICO, NO EXPONGA LA UNIDAD A LA LLUVIA NI A LA HUMEDAD. PARA REDUCIR EL RIESGO DE CHOQUE ELECTRICO, NO quite los paneles delantero, superior, laterales ni trasero. El interior no tiene piezas reparables por el usuario. Para servicio de reparacion y mantenimiento, solicite la atencion de un tecnico de servicio autorizado.

- Opere la unidad sólo a 120 VCA, 60 Hz, si la opera dentro de los Estados Unidos o Canadá. Para las impresoras que han sido enviadas fuera de los Estados Unidos y Canadá, opere la unidad sólo a 230/250 VCA. Si no está seguro de que su unidad está especificada con el régimen correcto de voltaje para la corriente de su país, **NO INTENTE USAR LA UNIDAD.** Póngase en contacto con su distribuidor o con la fábrica.
- Detenga la operación inmediatamente si algún líquido u objeto sólido cayera en el armario. Desenchufe la unidad y hágala revisar por un técnico de servicio autorizado.
- No desarme el armario. Para servicio de mantenimiento, solicite la atención de un técnico autorizado.

Prima di dare inizio al funzionamento dell'unità siete pregati di leggere attentamente le seguenti precauzioni di sicurezza.

Avvertenze

ATTENZIONE!

ONDE EVITARE IL PERICOLO DI INCENDIO O SCOSSA ELETTRICA, NON ESPORRE L'UNITÀ ALLA PIOGGIA OD UMIDITÀ. EVITARE DI RIMUOVERE I PANNELLI ANTERIORE, SUPERIORE, LATERALE O POSTERIORE PER RIDURRE IL RISCHIO DI SCOSSA ELETTRICA. LA MANUTENZIONE DELLE PARTI INTERNE DELL'UNITÀ NON È DI COMPETENZA DELL'UTENTE. AI FINI DELLA RIPARAZIONE RIVOLGERSI AL PERSONALE DI COMPETENZA.

- Negli Stati Uniti e Canada l'unità funziona solo con alimentazione a 120 VAC, 60 Hz. Le stampanti destinate ad altri paesi funzionano solo con alimentazione di 230/250 VAC. Qualora non abbiate la certezza che il trasformatore e la spina di cui disponete siano quelli adeguati all'alimentazione erogata nel vostro paese, **NON USARE L'UNITÀ**. Rivolgersi piuttosto al rivenditore o la fabbrica del luogo.
- Arrestare immediatamente il funzionamento dell'unità qualora si verifichi un versamento di liquido o la caduta di un oggetto solido al suo interno. Staccare la spina e rivolgersi al personale di assistenza qualificato.
- Non smontare la struttura dell'alloggiamento. Le riparazioni vanno effettuate solo dal personale di competenza.

Antes de operar a unidade, por favor leia cuidadosamente as seguintes precauções de segurança.

Advertências

CUIDADO!

PARA EVITAR O PERIGO DE INCÊNDIO OU CHOQUE ELÉTRICO, NÃO EXPONHA A UNIDADE À CHUVA OU UMIDADE. PARA REDUZIR O RISCO DE CHOQUE ELÉTRICO, NÃO REMOVA OS PAINÉIS DIANTEIRO, SUPERIOR, LATERAIS OU TRASEIRO. NÃO HÁ PEÇAS NO INTERIOR QUE POSSAM SER CONSERTADAS PELO USUÁRIO. PARA MANUTENÇÃO, PEÇA ASSISTÊNCIA A UM TÉCNICO QUALIFICADO.

- Opere a unidade somente em 120 VAC, 60 Hz, se estiver operando nos Estados Unidos ou Canadá. Para impressoras enviadas para fora dos Estados Unidos e Canadá, opere a unidade somente em 230/250 VAC. Se você tiver dúvidas a respeito da graduação correta de voltagem para a alimentação de energia do seu país, **NÃO TENDE USAR ESTA UNIDADE**. Entre em contato com seu revendedor ou com a fábrica.
- Se qualquer líquido ou objeto cair dentro do gabinete, páre a operação imediatamente. Desligue a unidade da tomada e chame um técnico qualificado.
- Não desmonte o gabinete. Para manutenção, peça assistência somente a um técnico qualificado.

Precauzioni per la Sicurezza

Precauções de Segurança

安全事項

機械を操作する前に次の安全注意事項を熟読してください。

ワーニング

注意！

火災や電撃事故防止のために、機械を雨水や湿気に晒さないでください。電撃リスクを減少するために、前、上、横、後各々のパネルを取り外してはいけません。ユーザーが自分で修理出来る部品は入っていませんので、修理は専門の修理員に依頼してください。

- 米国及びカナダ国内では、120VAC、60Hzでのみ操作してください。米国及びカナダ以外に出荷されたプリンターは230/250VACでのみ操作してください。自国の電源用の適切な電圧定格になっているかどうか疑わしい場合は、**機械を使用せずに**、販売店か工場に御問い合わせください。
- キャビネットに液体または固体物が落ち込んだ場合は、直ちに操作を中断し、プラグを抜いて、専門の修理員にチェックしてもらってください。
- キャビネットを分解しないでください。修理はかならず専門の修理員に依頼してください。

安全預防措施

在使用本機件前請先詳讀下列安全預防措施。

警告

注意！

不要使本機件淋雨或浸濕以免發生火警或觸電事故，不要拆去本機件前、後頂面或兩邊板壁以減少觸電危險事件。本機件內部並無用戶可以自行維修的零件。若需要維修應請來合格的維修人員。

- 在美國及加拿大境內使用時，應將本機件連接於120伏60赫交流電源。已運送出美國及加拿大國境的打印機應連接於230/250伏交流電源。如對本機件電路裝配是否適用於所在地的電源有任何疑問則切勿使用本機件。請先與承銷商或供應廠商聯絡。
- 如有任何液體或固體物件進入機盒應立即停止操作並拔出插頭再請合格維修人員前來檢查。
- 不可拆開機盒，應由合格人員從事維修工作。

قبل تشغيل الآلة يجب قراءة إحتياطات الأمان الآتية بدقة.

تحذيرات

إحترس!

لتجنب وتقليل أخطار الحريق أو الصدمة الكهربائية ، لا تعرض الآلة للمطر أو الرطوبة . لتجنب خطر أي صدمة كهربائية؛ لا تزيل غطاء الخزانة الأمامي أو العلوي أو الخلفي. لا يصح للمستعمل محاولة ضبط أو تغيير أي قطع بالداخل ؛ بل يجب الإستعانة بمتخصصي الخدمة.

- يتم تشغيل الآلة بتيار كهربائي ١٢٠ فولت ، ٦٠ هرتز فقط في حالة استعمالها في الولايات المتحدة أو كندا. أما الآت الطباعة المشحونة خارج الولايات المتحدة وكندا، فإنها تتطلب تياراً كهربائياً ٢٣٠-٢٤٠ فولت. **لا تستعمل الآلة** إذا كان لديك أي شك في أن مواصفات الكهرباء المتوفرة في بلد التشغيل لا تطابق مواصفات الكهرباء المطلوبه لآله. إتصل بوكيلك أو بالمصنع.
- أوقف التشغيل فوراً إذا لاحظت تساقط أي سائل أو مادة صلبة بداخل الخزانة. أفصل الآلة عن الكهرباء وأطلب من متخصص الخدمة الكشف عليها.
- لا تفك خزانة الآلة. أستعين بمتخصصي الخدمة فقط.

3

Getting Started

A. Choosing a Good Location

Place the unit in a location with adequate air circulation to prevent internal heat build up.

1. Use the dimensions specified in Section 12 as a guideline for the minimum clearances to the unit.
2. Do not place the unit in a location where the ventilation holes located on the rear of the unit could become blocked.
3. Do not install unit near heat sources, such as radiators or air ducts, or in a place subject to direct sun-light, excessive dust, mechanical vibration, or shock.

B. About Moisture Condensation

If the unit is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside the unit. Should this occur, print quality may not be optimum. Leave the unit turned off in a warm, dry room for several hours before using. This will allow the moisture to evaporate.

C. Unpacking and Inspection

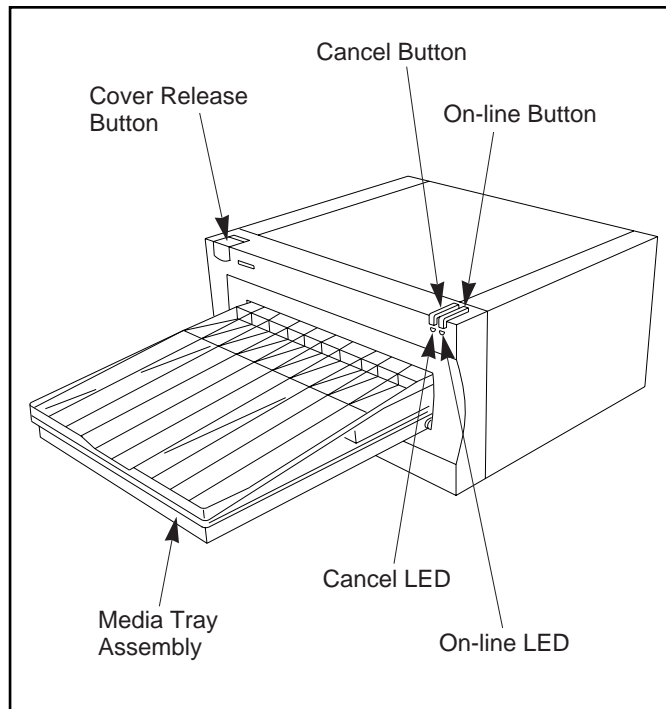
While unpacking your printer, inspect the carton to ensure that no damage has occurred during shipping. Make sure that all supplied accessories are included with your unit. The following items should be included within the Color Sign Printer's packaging:

- Printer
- Power Cord
- Interface Cable
- Media Supply Tray
- Media Tray Cover
- Ribbon Cartridge
- 3-Color Resin Ribbon (50 Prints)
- #300-Series White Calendered Vinyl (50 Sheets)
- Printer Driver Diskette (3.5")
- 32-Bit Print Spooler Diskette (3.5"); for use in Windows 95 only
- Warranty Statement and Registration Card
- This manual and other printed information

Save the carton and packing materials. They will come in handy when transporting the unit.

D. Identifying the Parts

This illustration shows the features found on the front of your Color Sign Printer.



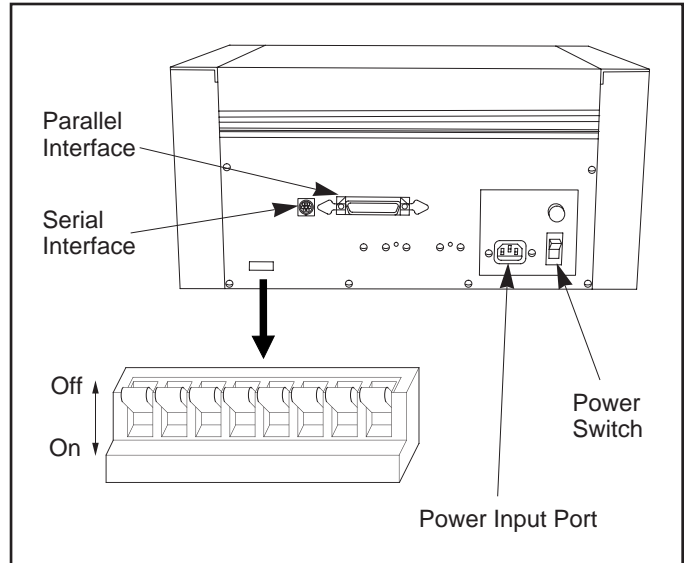
The **On-Line Button** takes the printer on- and off-line. When the printer is on-line, the on-line LED light will turn ON. When the printer is off-line, the on-line light will turn OFF. The printer must have its on-line light ON in order to print. When flashing, the on-line light also serves to indicate a number of other printer conditions. Such conditions are discussed in Section 9-A of this manual.

The **Cancel Button** cancels the print job currently being printed. After a print job is canceled, both LED lights will once again turn ON. Any print media remaining in the printer after the cancel button is pressed will automatically be ejected.

The **Cover Release Button** opens the printer's Top Cover allowing you to load and/or change print ribbons.

The **Media Tray Assembly** is where blank print media is loaded and where finished output is ejected.

This illustration shows the switches and input ports found on the rear panel of the printer. For more information on these port, please refer to Sections 6, 7, or Appendix A.

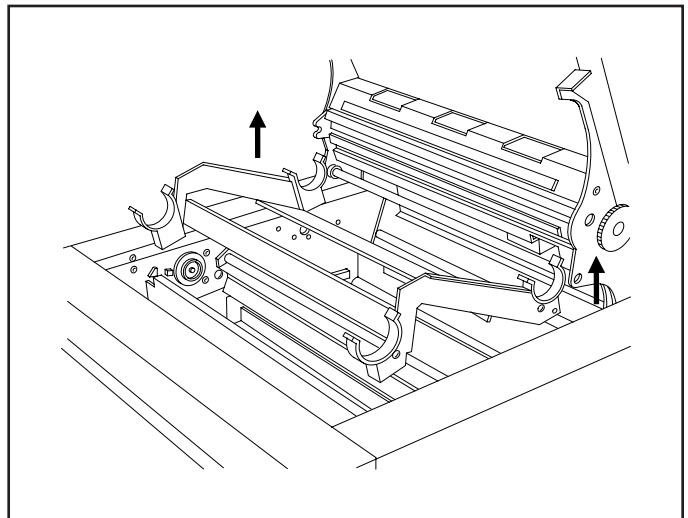


NOTE

Leave the small switches on the rear panel of the printer in the default position unless otherwise instructed by this manual or a factory technician. The default position of these switches is for switch #1 and #2 to be DOWN and for the rest of the switches to be UP.

E. Removing the Ribbon Cartridge

The Ribbon Cartridge is what holds a print ribbon in place inside the printer. A single Ribbon Cartridge is included with your Color Sign Printer. During shipment, this cartridge is fastened to the inside of the unit. To remove the Ribbon Cartridge from the inside of the printer, refer to the following steps:



- 1.** Press the Cover Release Button. Allow the cover to swing up and open.
- 2.** With the cover open, you can see the Ribbon Cartridge.
- 3.** Remove the shipping tape from both sides of the cartridge. **GRASPING EACH SIDE OF THE CARTRIDGE**, lift it straight up and carefully remove it from the printer.

You are now ready to go on to Section 4 to learn about print ribbons, print media, and how each is loaded into the printer.

4

Ribbons and Print Media

A. Introduction

The Color Sign Printer is able to produce a variety of output by using a variety of different print ribbons. Each of these ribbons is unique, and each requires its own compatible print media. To make it easy for you to remember which ribbons are to be used with which print media and which type of output each set of print supplies will produce, the Color Sign Printer's print supplies are divided into three separate categories — dye-sublimation, resin thermal transfer, and wax thermal transfer.

This section describes the ribbon and print media in each of these categories and explains how to install these print supplies into your printer. This section also explains the Color Sign Printer's specialty supplies which can be used to create positive film for screens, fabric transfers, and even photo coffee mugs.

B. About Ribbons **Dye-Sublimation**

For photo-quality, full-color printing with no dithering, the Color Sign Printer offers both a 3-color (C,M,Y,O) and a 4-color (C,M,Y,K) dye-sublimation ribbon. The 3-color dye-sublimation ribbon, called FotoShield™, provides the three process colors of yellow, magenta, and cyan along with a clear overlay panel which makes printed images more durable. Due to its increased print longevity and fade resistance, this ribbon is ideal for printing digital photographs or indoor, photo-quality signage.

The 4-color dye-sublimation ribbon also provides the three process colors of yellow, magenta, and cyan but provides a black panel in place of an overlay panel. With its added black panel, this ribbon is ideal for printing pre-press proofs, layouts, or any other image which requires true black text or graphics.

NOTE

Since the 4-color ribbon does not include a protective overlay, the longevity of its printed images will be significantly less than that of the 3-color FotoShield ribbon. If maximum dye-sublimation print longevity is required, you must use the 3-color FotoShield ribbon with overlay.

The 3-color and 4-color dye-sublimation ribbons produce 50 prints and provide a maximum printable area of 11.95" x 17.4" (304 x 442mm). Dye-sublimation ribbons are distinguished by their GRAY plastic cores and can be used only in conjunction with the Color Sign Printer's special dye-receptive paper (see Part E of this section for more information on dye-sublimation paper).

Resin Thermal Transfer

For long lasting, outdoor-durable printing, the Color Sign Printer offers both a 3-color (C,M,Y) resin thermal transfer ribbon and a variety of spot color resin ribbons. The 3-color resin ribbon allows you to automatically print full process color images. The spot color resin ribbons allow you to print single or multi-spot-color jobs. Please note that process color output from the 3-color ribbon will dither. Due to the nature of resin inks, resin ribbons are ideal for creating highly-durable signs, labels, or decals for use in more challenging environments.

A single 3-color resin ribbon is included with your printer. This will allow you to begin printing immediately. 3-color resin ribbons produce 50 prints and have a maximum printable area of up to 11.95" x 22" (304 x 559mm) when used with the extended length vinyl. The spot color resin ribbons produce about 200 prints and have a maximum printable area of up to 11.95" x 24" (304 x 610mm). Resin thermal transfer ribbons are distinguished by their *WHITE* plastic cores and should be used only in conjunction with the #300-Series polyester and vinyl print media (see Part E of this section for more information on #300-Series print media).

Wax Thermal Transfer

For quick, inexpensive full-color printing, the Color Sign Printer offers a 4-color (C,M,Y,K) wax thermal transfer ribbon. Like the 4-color dye-sublimation ribbon, this ribbon provides all of the process colors including the black panel. With its low cost and fast print speed, the 4-color wax ribbon is ideal for printing proofs of your designs or for printing low-durability, temporary indoor signage. It is also the ribbon required for printing onto the your printer's special T-shirt transfer paper (see Part F of this section for more information on specialty supplies).

The 4-color wax ribbon produces 80 prints and provides a maximum printable area of 11.95" x 17.4" (304 x 442mm). Wax thermal transfer ribbons are distinguished by their *TAN* cardboard cores and should be use only in conjunction with the wax thermal transfer paper (see Part E of this section for more information on wax thermal paper).

A monochrome wax thermal ribbon (K) is also available for printing monochrome images onto paper or onto transparency film for making

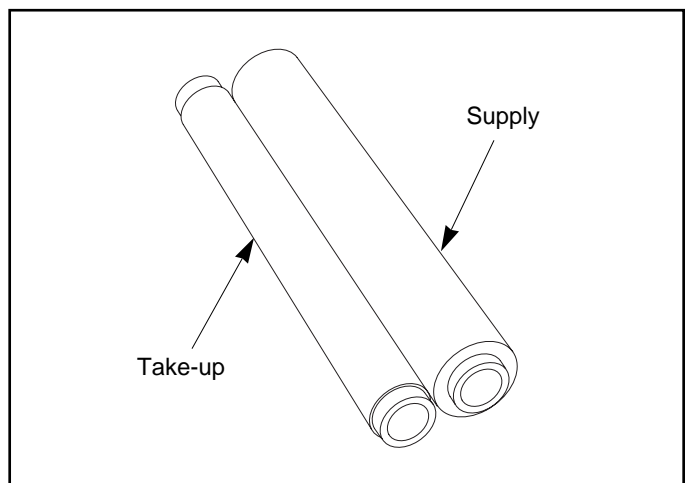
positive film for screens. This ribbon produces 200 prints and provides a maximum printable area of 11.95" x 17.4" (304 x 442mm).

For added convenience, the Color Sign Printer also accepts smaller A / A4 Super-size 4-color wax thermal and dye-sublimation ribbons. These ribbons produce 50 prints and are perfect for printing smaller format images in sizes up to 8.8" x 11.3" (224 x 287mm). Use these ribbons only with the Color Sign Printer's A / A4 Super-size (9" x 14" / 229 x 356mm) wax thermal or dye-sublimation papers. Note that A / A4 Super-size print supplies are not available for resin thermal printing. For current selection and availability on all of the Color Sign Printer ribbons, please contact your nearest reseller or the printer manufacturer's supplies department.

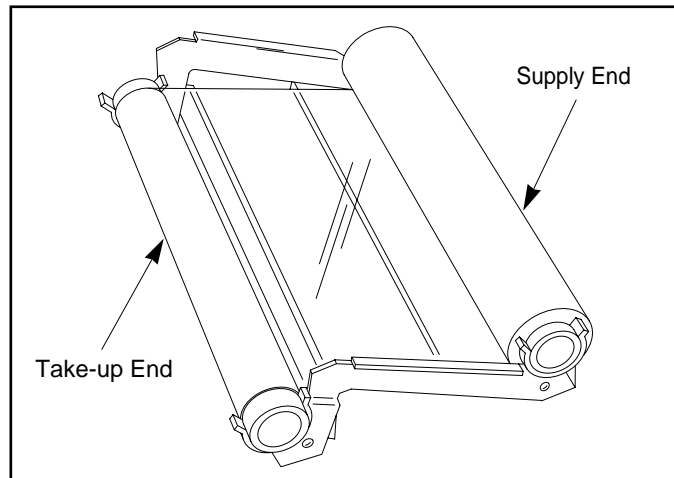
C. Loading Ribbon into the Ribbon Cartridge

Whether using the Ribbon Cartridge supplied with your printer or using other cartridges purchased separately, all Color Sign Printer Ribbon Cartridges can be used with any of the different print ribbons. As you purchase additional print ribbons, you may also wish to purchase additional Ribbon Cartridges for each. This makes the process of switching ribbons much faster and much more convenient. Follow these steps to load a print ribbon into a Ribbon Cartridge:

1. Remove the ribbon from its packaging. Do not touch the colored portion of the ribbon. Oil or dirt from your hands can impair print quality. Handle the ribbon only by the ends of its ribbon cores.
2. The supply end of the ribbon is the end with the fresh, unused ribbon on it. The take-up end of the ribbon is the other end.



3. Place the supply end of the ribbon into the supply end of the Ribbon Cartridge as indicated. Make certain that the ribbon is fed from *underneath* the supply end of the ribbon roll, *up and over* the top of the take-up end of the ribbon roll.



IMPORTANT!

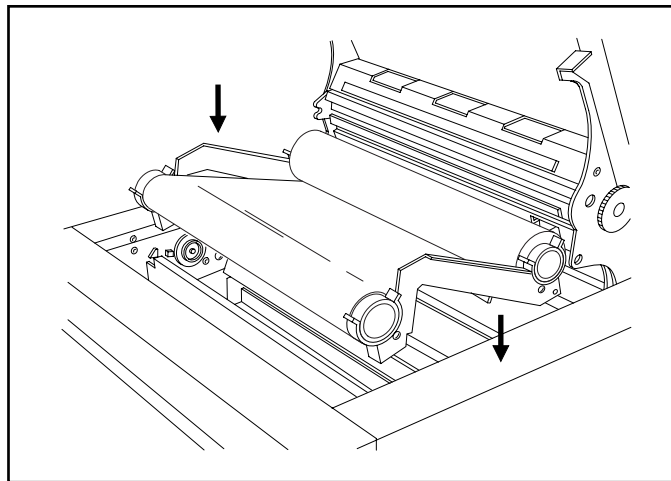
DO NOT REVERSE THE RIBBON. DAMAGE MAY OCCUR TO THE THERMAL PRINTHEAD!

Once the ribbon is installed into the Ribbon Cartridge, it can then be placed into the printer.

D. Placing the Ribbon Cartridge into the Printer

1. Press the Cover Release Button. Allow the cover to swing up and open.

2. With the cover open, place the loaded Ribbon Cartridge into the printer. Be certain that the supply end of the Ribbon Cartridge is towards the rear of the printer.



3. Close the cover. When you start to print, the notches on the Ribbon Drive Hub and the take-up roll will automatically engage.

E. About Print Media

Dye-Sublimation

For dye-sublimation printing, a special dye-receptive paper is required. This paper is specifically designed for printing with the Color Sign Printer's dye-sublimation ribbons and must be used in order to print dye-sublimation output. It is available in a B/A3 Super-size (12" x 20" / 305 x 508mm) and comes packaged in 50 sheet quantities. When using dye-sublimation paper, keep in mind that there are two distinct types of this paper available: one is for use only with the 3-color FotoShield dye-sublimation ribbon, and the other is for use only with the 4-color dye-sublimation ribbon. Each of these specific papers is labeled accordingly and should not be used interchangeably. When printing with either paper, print only on the white, glossy side.

Resin Thermal Transfer

For resin thermal transfer printing, special #300-Series vinyl and polyester print media are available. This print media is specifically designed for use with the Color Sign Printer. Both the vinyl and the polyester are optimized to feed and print consistently and are also carefully packaged in dust-free plastic bags to help prevent dust from contaminating your output. For these reasons, it is highly recommended that you use only #300-Series print media when printing resin thermal output.

#300-Series vinyl has a permanent adhesive backing and is available in both a white cast and a white or clear calendered. For your convenience, 50 sheets of the white calendered vinyl are included with your printer so you can immediately begin printing with the included 3-color resin ribbon. Standard packages of #300-Series vinyl include 100 sheets.

With the Color Sign Printer's wide selection of resin ribbon colors, the white or clear vinyls should, in most cases, provide you with a good solution for printing a near limitless range of background colors. If you do need a colored vinyl, however, it is recommended that you use only Avery XL1000 Series cast vinyl or Avery MX-4000 Series calendered vinyl. If possible, it is also recommended that the top and bottom .55" (14mm) of this vinyl be stripped from the backing, just as is done with the #300-Series vinyl. This will assure more consistent feeding and printing. Other brands of vinyl may feed through the printer, but since vinyls vary so much from one to another, the printer manufacturer will not be responsible for the results.

#300-Series polyester has a permanent adhesive backing and is available with either a brushed gold or brushed silver metallic finish. These polyester materials are packaged in 100 sheet quantities and are perfect for printing inexpensive plaques and nameplates.

All #300-Series print media is available in a B/A3 Super-size (12" x 20" / 305 x 508mm). This print media provides a maximum printable area of 11.95" x 17.4" (304 x 447mm). If a longer print area is required, an extended 12" x 26" (305 x 660mm) length is also available, but only in the white calendered vinyl. This extended print media provides a maximum printable area of 11.95" x 22" (304 x 559mm) when used with the 3-color resin ribbon or of 11.95" x 24" (304 x 610mm) when used with the spot color resin ribbons.

Wax Thermal Transfer

For wax thermal transfer printing, a premium grade wax thermal transfer paper is available. This paper is an ultra-smooth, coated paper stock optimized for wax thermal printing. It is available in a B/A3 Super-size (12" x 20" / 305 x 508mm) and comes packaged in 50 sheet quantities. Due to its exceptional smoothness and extended length, this paper is ideal for any type of larger format, full-color graphics printing. This paper can be printed on either side.

IMPORTANT!

Always store the Color Sign Printer's blank print media in its original packaging and place on a smooth, flat surface when not in use. Print media must not be exposed to excess dust, heat, direct sunlight, or moisture and must not be allowed to curl or bend.

F. Specialty Supplies and Applications

Transparency Film

With a wax thermal transfer ribbon installed, the Color Sign Printer is capable of printing onto specially coated sheets of transparency film. This film is available in a B/A3 Super-size (12" x 20" / 305 x 508mm) and comes packaged in 50 sheet quantities. When used with the opaque monochrome wax thermal ribbon, transparency film is ideal for creating positive film for screens.

Heat Transfers

A special T-shirt transfer paper is available which allows the Color Sign Printer to print custom, full-color heat transfers. This paper is available in a B/A3 Super-size (12" x 20" / 305 x 508mm) and is

for use only with the Color Sign Printer's wax thermal transfer ribbons. Printed images can be transferred to T-shirts, aprons, banners, sweatshirts, mouse pads, caps, and more. A special FotoMUG! Transfer Kit is also available, which allows you to transfer photo-quality images printed with the standard dye-sublimation supplies to coated ceramic coffee mugs. All transferred images are permanent and machine washable.

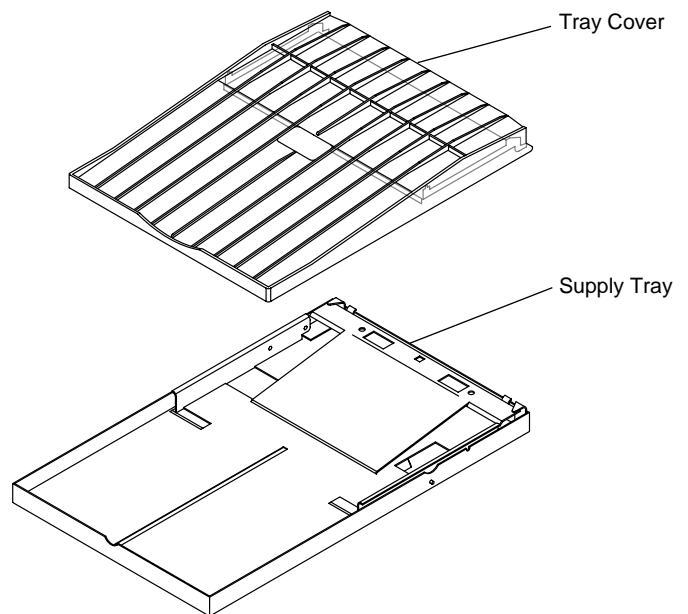
NOTE

When printing images that will be transferred to a mug, the overlay of the 3-color FotoShield dye-sublimation ribbon must not be applied. See Section 6-E or 7-D for information on how to disable this overlay.

For current selection and availability on all of the Color Sign Printer's print media and specialty supplies, please contact your nearest reseller or the printer manufacturer's supplies department.

G. Loading Print Media into the Supply Tray

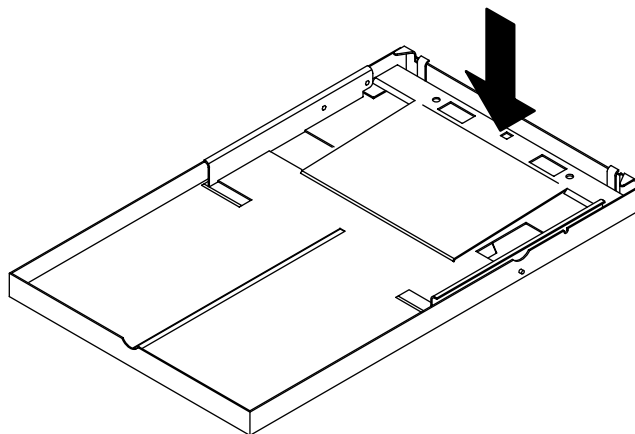
The Color Sign Printer has an adjustable Media Tray Assembly which consists of two separate parts: the Supply Tray and the Tray Cover.



The **Supply Tray** stores the blank media to be printed. The **Tray Cover** rests on top of the Supply Tray and protects print media within the Supply Tray from dust or other contaminants. The Tray Cover also helps guide media during the printing process and catches finished output after it is printed. If you intend to use a variety of print media, you may wish to purchase additional Media Tray Assemblies. Additional trays not only offer an ideal place to store blank print media, they also make the process of switching between different print media faster and more convenient.

Refer to the following steps to load print media into the Supply Tray:

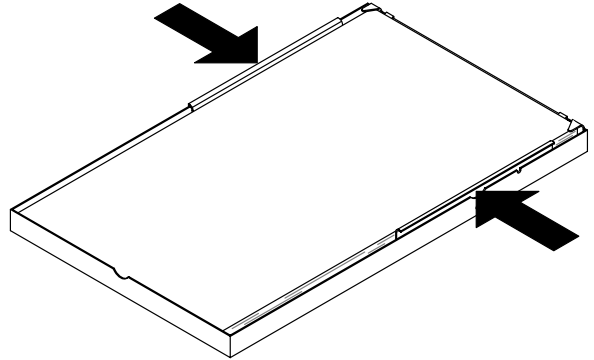
1. Before loading any media, depress the spring loaded panel of the Supply Tray until it is latched in its “down” position. This panel will unlatch and return to its “up” position when inserted into the printer.



2. Remove a stack of print media from its packaging. Please note that no more than about 50 sheets of print media should be loaded at a time. Do not attempt to load more than this amount.

3. Fan the stack of print media to assure that none of the sheets are sticking together. Then, neatly stack the media and check to see that it is free of bent edges. Handle the print media only along the edges and **DO NOT TOUCH THE PRINTABLE SIDE**. Oil or dirt from your hands can impair print quality.

4. Place the print media — PRINT SIDE FACING DOWN — between the media guides of the Supply Tray. When inserted properly, the backing side of the print media will be facing up. Adjust the media guides snugly against the media stack. This will assure consistent feeding and printing.



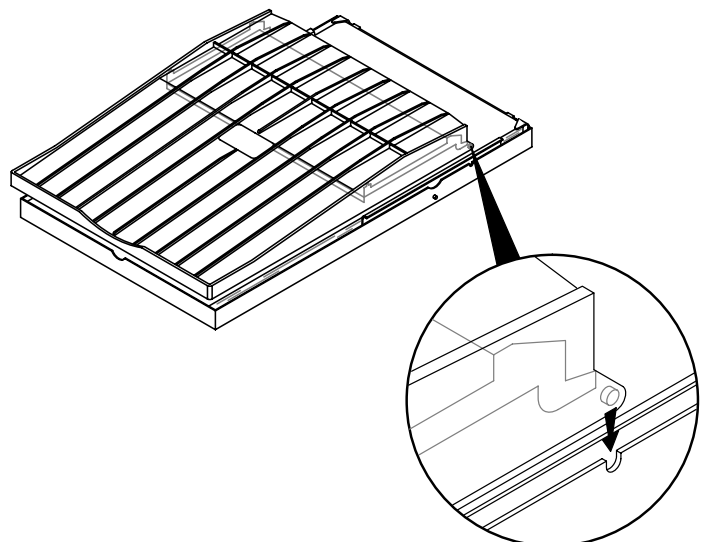
NOTE

Do not attempt to load print media on which you have already printed or which is not factory approved. Printing onto such media may damage the printer.

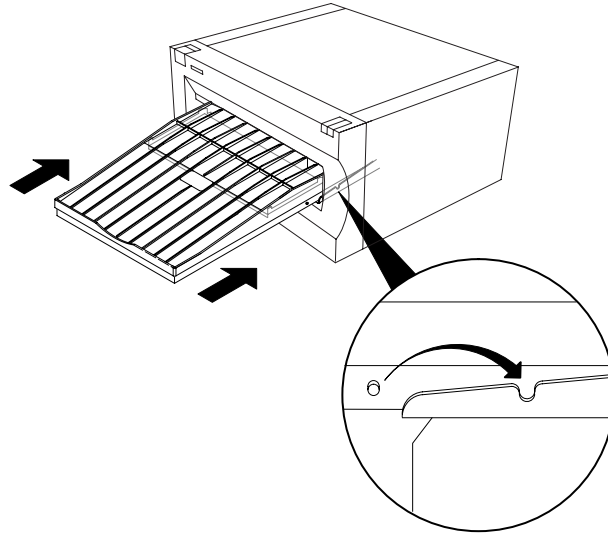
H. Inserting the Media Tray Assembly into the Printer

Once print media is loaded into the Supply Tray, the Media Tray Assembly can then be inserted into the printer. Although the separate parts of the Media Tray Assembly can be loaded into the printer one at a time, it is easiest to load the Media Tray when it is fully assembled. Refer to the following steps to assemble and insert the Media Tray Assembly into the printer.

1. Place the assembly's Tray Cover onto the Supply Tray so the extensions on the front edges of the Tray Cover engage the securing notches on both sides of the Supply Tray.



2. Grasp the fully assembled Media Tray Assembly and slide it into the printer until the mounting posts on both sides of the Supply Tray engage the securing notches on both sides of the printer's front interior.



As the Media Tray Assembly is inserted into the printer, you should hear its spring loaded panel automatically unlatch and spring back to its "up" position. This panel forces the media stack against the printer's feed rollers to assure consistent feeding.

I. Important Print Media Information

Now that you have successfully installed print media into your printer, you should be aware of some very important print media information. This information will make printing onto all the various media sizes much easier and will help you avoid some rather simple mistakes.

After installing print media, you must also select the appropriate paper size option for that media from within the Color Sign Printer's printer driver setup window (see Section 6-E or 7-D for more information on the Color Sign Printer's printer driver). This will let the Color Sign Printer know which print media size is currently loaded into the printer. Although a number of paper size options are listed and supported in the printer driver, the main paper size options are **Super A/A4**, **Super B/A3**, and **Super B/A3 Long**.

When choosing the appropriate paper size option from within the printer driver, simply select the paper size option that corresponds to the print media size currently installed in the printer. If, for example, you are printing onto B/A3 Super-size (12" x 20" / 305 x 508mm) print media, choose the

Super B/A3 paper size option from within the printer driver setup. If printing onto the extended length 12" x 26" (305 x 660mm) vinyl, choose the **Super B/A3 Long** paper size option. Likewise, if printing with the smaller format A/A4 Super-size print supplies, choose the **Super A/A4** paper size option.

Table 4-1 lists the maximum printable areas for each of these three main paper size options and the types of print media available for each. Make sure that the image you are sending to the printer falls within these printable areas. Otherwise, your printed image could be cut off.

Paper Size	Page Length	Color Print Area	Monochrome Print Area	Media Types Available
A/A4 Super	9" x 14" 229 x 356mm	8.8" x 11.3" 224 x 287mm	8.8" x 11.3" 224 x 287mm	<ul style="list-style-type: none"> • Dye-sublimation paper • Wax thermal transfer paper
B/A3 Super	12" x 20" 305 x 508mm	11.95" x 17.4" 304 x 442mm	11.95" x 17.4" 304 x 442mm	<ul style="list-style-type: none"> • #300-Series cast and calendered vinyl and polyester • Dye-sublimation paper • Wax thermal transfer paper • T-shirt transfer paper • Transparency film
B/A3 Super Long	12" x 26" 305 x 660mm	11.95" x 22" 304 x 559mm (When used with 3-color resin ribbon) 11.95" x 24" 304 x 610mm (When used with process spot-color ribbons)	11.95" x 24" 304 x 610mm	<ul style="list-style-type: none"> • #300-Series calendered vinyl

TABLE 4-1: Paper Size Options and Print Areas

When printing, it is also very important to realize each paper size has a non-printable margin on both the top and bottom of the sheet. These non-printable margins are necessary in order for the Color Sign Printer's rollers to tightly grip print media during the printing process. Table 4-2 lists the approximate non-printable margins for each of the Color Sign Printer's paper sizes:

Paper Size	TOP Non-Printable	BOTTOM Non-Printable
A/A4 Super	1.0" (25.4mm)	1.6 (40.6mm)
B/A3 Super	1.0" (25.4mm)	1.6 (40.6mm)
B/A3 Super Long	.75" (19mm)	3.25" (83mm) (When used with 3-color resin ribbon) 1.25" (32mm) (When used with process spot-color ribbons)

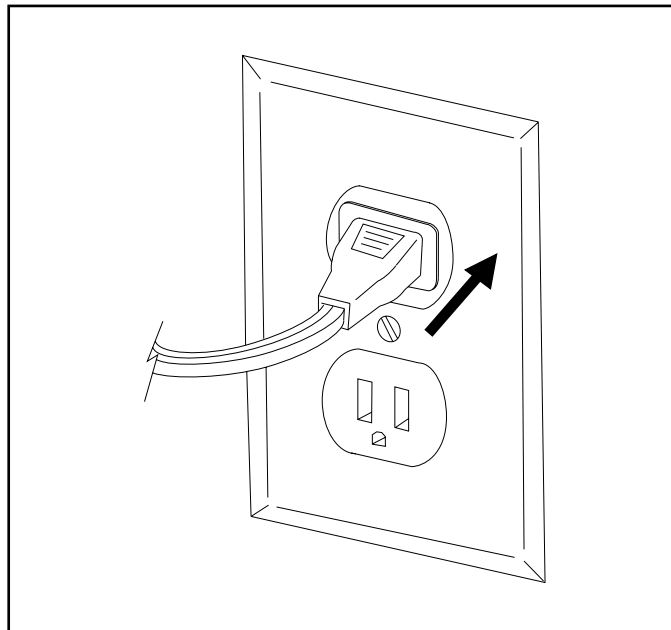
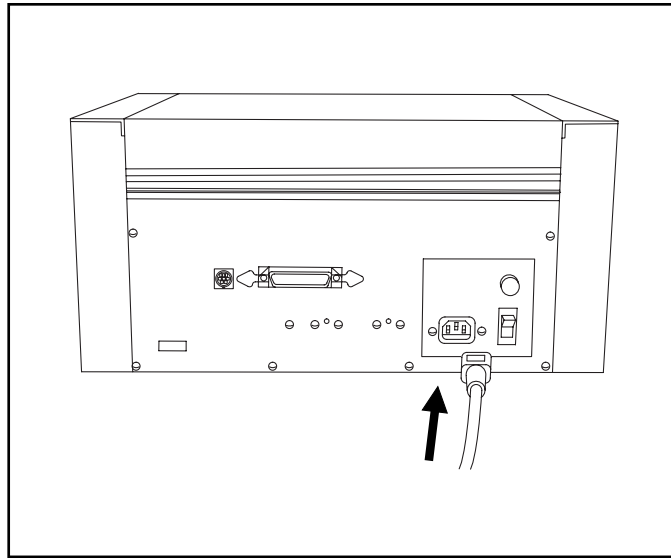
TABLE 4-2: Non-Printable Margins

5

Powering Up the Printer

A. Applying Power

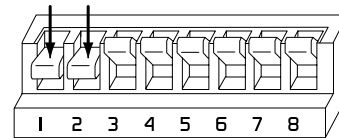
1. Locate the power cord supplied with your printer.
2. With the printers power switch turned OFF, place one end of the power cord into the power port on the rear panel of the printer.
3. Place the other end of the power cord into an available wall outlet.
4. Once the power cord is connected, press the power switch located on the rear panel of the printer to turn the power ON.



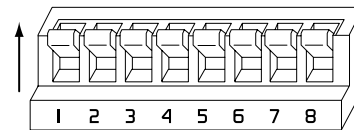
B. Running the Self Test

Now that print supplies are installed and power is applied, a self test should be performed to check for proper operation of the printer. The Color Sign Printer is capable of doing a specific self test print for 3-color resin, wax thermal transfer, and dye-sublimation. To tell your printer which type of self test you would like to print, simply configure the small switches on the printer's rear panel accordingly.

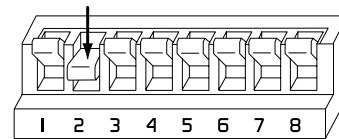
If you have a *3-color resin* ribbon and #300-Series print media installed, leave all switches set at their default position of switches 1 and 2 DOWN and the rest of the switches UP.



If you have a *wax thermal transfer* ribbon and print media installed, flip all switches UP and turn the printer power OFF and ON to reset the printer.



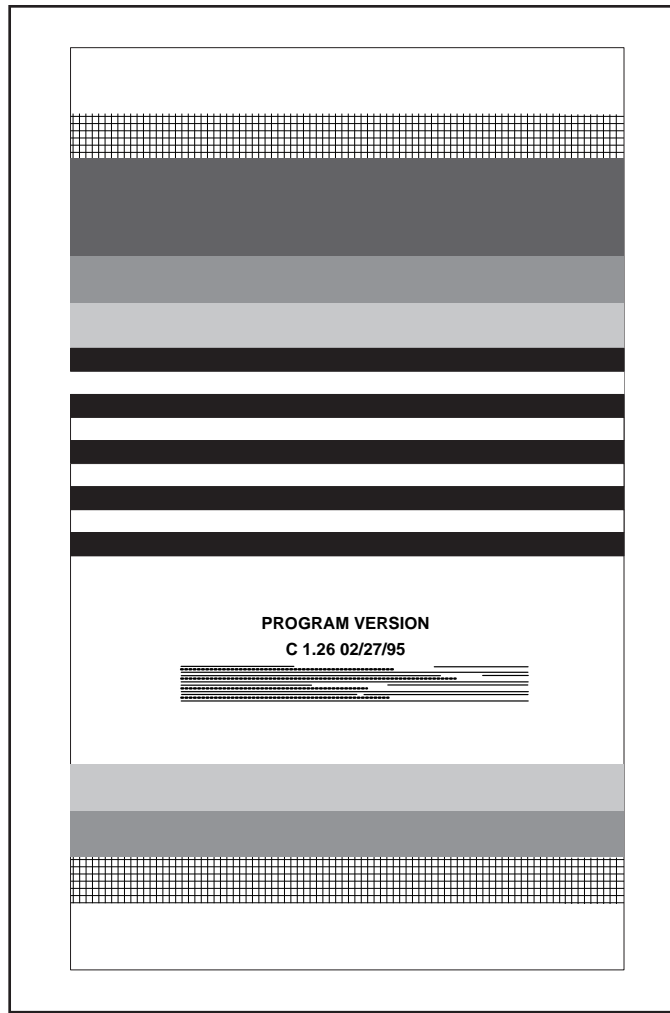
If you have #200-Series **dye-sublimation** supplies installed, flip *only* switch 2 down and turn the printer power OFF and ON to reset the printer.



Once you have selected the type of self test you would like to print, refer to the following steps to initiate the self test print.

- 1.** Make sure the appropriate supplies are properly loaded, that power is ON, and that the Top Cover is shut.
- 2.** *Press and release* the cancel button. Notice the on-line light turns off momentarily just after the cancel button is pressed.
- 3.** Immediately after pressing the cancel button, while the on-line light is momentarily off, *press and hold* the on-line button until the printer begins to feed a sheet of print media.

4. Release the on-line button when you hear the printer's engine begin to cycle. The Color Sign Printer will print the self test image. A sample of this image is shown below.



Self Test Example
(Approximately 30% of actual size)

6

Using the Color Sign Printer with an IBM-PC or Compatible

A. Connecting the Color Sign Printer to Your PC

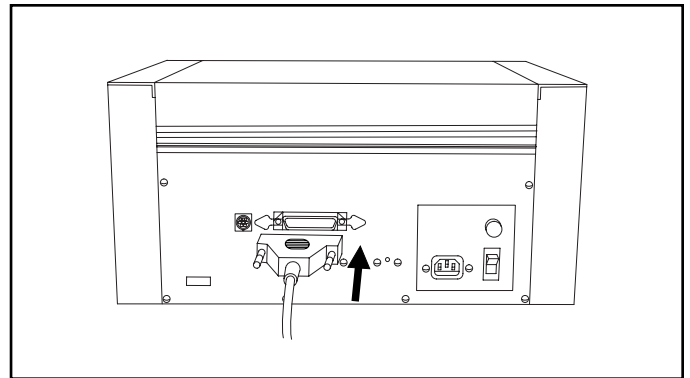
The Color Sign Printer is designed to be used with nearly any high-end IBM-PC or compatible running Windows 3.1x or Windows 95. For best performance, a minimum of a Pentium™ class computer with 32 megabytes of RAM or higher and a hard disk with at least 200 megabytes of free space is recommended. Note that processing speed will increase if additional RAM is added.

The Color Sign Printer is equipped with a Centronics parallel interface port. This port is the means through which the printer receives data from your computer. To connect the Color Sign Printer to your computer, simply obtain a shielded, bi-directional parallel cable and refer to the following steps.

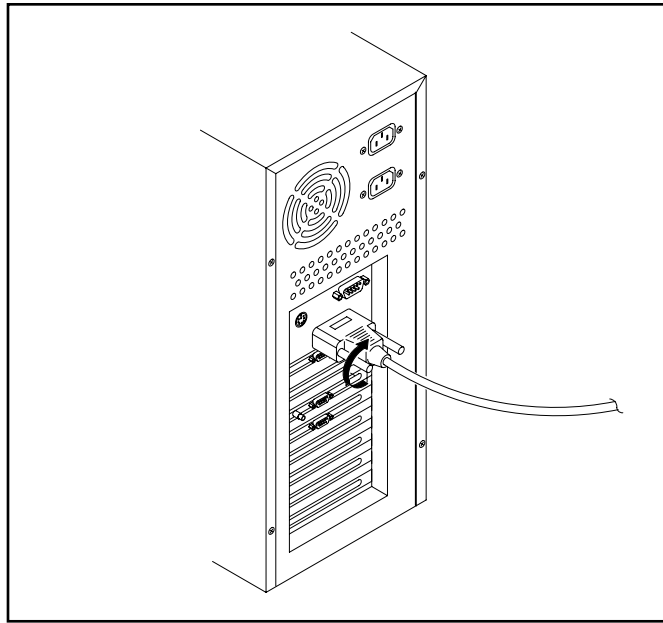
NOTE

When connecting the Color Sign Printer to your computer, it is very important to always use a high-quality interface cable suitable for the Color Sign Printer's high-speed rate of data transmission. A suitable interface cable is a shielded, bi-directional parallel cable (preferably an I-EEE 1284 type cable) and should be no longer than 6 feet in length. Also, for best results, DO NOT connect the Color Sign Printer through a switch box, as this can interfere with the flow of print data.

1. Connect the Centronics-type parallel side to the Color Sign Printer. Snap the fastening clips into place.



2. Connect the other side to the back of your PC at the LPT1, LPT2, or PARALLEL connector. Tighten the cable's thumbscrews.



3. The Color Sign Printer must have its on-line LED light illuminated to receive data. If the light is not ON, verify that the printer power is ON, and press the on-line button.

B. Installing the Windows GDI Printer Driver Software

The Color Sign Printer can be used with virtually any Microsoft Windows 3.1x or Windows 95 software application program. Before printing, however, you must tell the application that you're using the Color Sign Printer. This is accomplished the first time you use the printer by installing what is called a "printer driver." The printer driver is simply software which gives the Color Sign Printer the proper commands it needs in order to print.

The printer driver included with your Color Sign Printer is a Windows GDI (Graphical Display Interface) printer driver. The **Windows GDI printer driver** is a non-PostScript driver and is used for printing non-PostScript file formats such as a TIFF, JPEG, or BMP from non-PostScript applications.

As an option, the Color Sign Printer also has true **Adobe PostScript Level 2 software** available. This optional software provides genuine PostScript support and is used only when printing PostScript files from a PostScript application. This software is not included with the Color Sign Printer and is only necessary if you intend to print PostScript files.

For full instructions on installing and using the Color Sign Printer's Windows GDI printer driver, refer to the remainder of this section. If you purchased the Adobe PostScript Level 2 software,

refer to the User's Manual included with that software for complete instructions. Please note that the Windows GDI printer driver packaged with the Color Sign Printer must be installed prior to installing and using the PostScript software.

NOTE

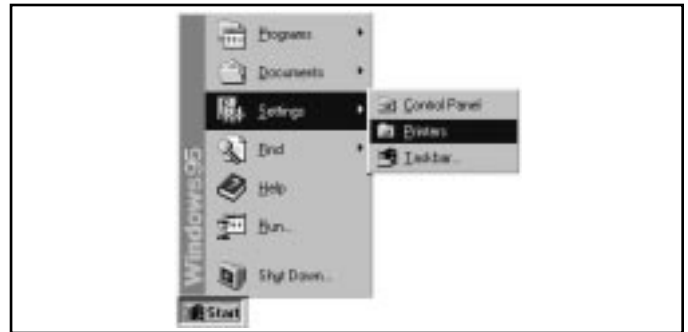
This section of the Operator's Manual assumes that you are already familiar with Windows and know how it operates. If you are not yet familiar with Windows, consult the appropriate Microsoft documentation to become familiar with the basics of Windows before proceeding.

Windows 95

To install the GDI printer driver into Windows 95, refer to the following:

1. Insert the printer driver diskette into your computer's disk drive.

2. Click the **Start** button, point to **Settings**, and select **Printers**.



3. Double-click on the **Add Printer** icon.



4. Follow the on-screen instructions to complete installation. When prompted, do not have Windows print a test print, since you most likely performed a printer self test in Section 5-B. Once installed, the "Color Sign Printer" icon will appear in the Printers folder. See Part E of this section for information on printer driver settings and options.



NOTE

Before installing updated printer driver versions, always delete the existing printer driver version from your system. To do this, simply select the printer driver icon from within the Printers folder, and press the Delete key.

Windows 3.1x

To install the GDI printer driver into Windows 3.1x, refer to the following:

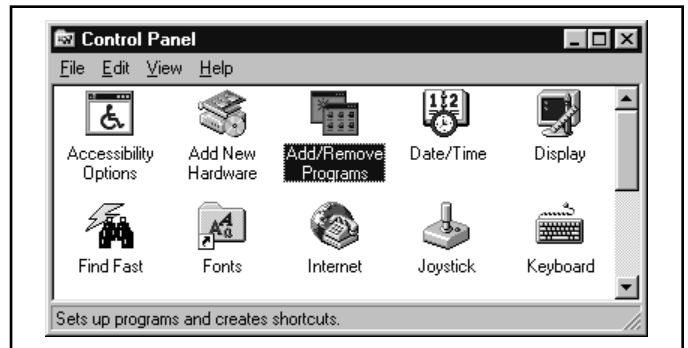
1. After starting Windows, go to the Main program group and select **Control Panel**.
2. From the Control Panel, select **Printers**.
3. Select **Use Print Manager** from the bottom left of the Printers window.
4. Select the **Add>>** button.
5. Highlight the **Install Unlisted or Updated Printer** option from List of Printers.
6. Select the **Install** button.
7. Insert the supplied Printer Driver diskette into your computer's disk drive. If you insert the diskette in a drive other than the A: drive displayed in the Install Driver dialog box, you must change the drive designation. Select the **OK** button.
8. "Color Sign Printer" should now be listed in the Add Unlisted or Updated Printer dialog box. Select the **OK** button. Your PC's disk drive will now load the printer driver. Depending upon your computer, loading will take about 10 to 20 seconds.
9. Select the **Set As Default Printer** button in the Printers window. The Color Sign Printer has now been selected as your default (main) printer. If you wish to use another printer later, you must de-select the Color Sign Printer and switch back to the other printer's driver.
10. Finally, select the **Connect** button. Check that the box called **Fast Printing Direct to Port** is selected. Then, increase the **Transmission retry** value from 45 to **900**. Click on **OK** and close out of the Printers window. See Part E of this section for information on printer driver settings and options.

C. Installing the 32-Bit Print Spooler for Windows 95

The Color Sign Printer ships with a print utility program called the 32-Bit Print Spooler. **This print spooler is for use only with Windows 95.** Once installed, the print spooler is able to process your print jobs and send them to the printer at consistently faster speeds than if sending print jobs through the system spooler of Windows 95. **In order for the 32-Bit Print Spooler to function properly, however, you must be sure your computer's parallel port is configured according to the instructions in Part D of this section.**

The 32-Bit Print Spooler installs just like any other standard Windows 95 application program. To install the 32-Bit Print Spooler, refer to the following:

1. Insert the 32-Bit Print Spooler diskette into your computer's disk drive.
2. Click the **Start** button, point to **Settings**, and select **Control Panel**.
3. Double-click on the **Add/Remove Programs** icon.



4. Follow the on-screen instructions to complete installation. Once installed, the 32-Bit Print Spooler icon, shown below, will appear in the Programs group of the Start menu.



NOTE

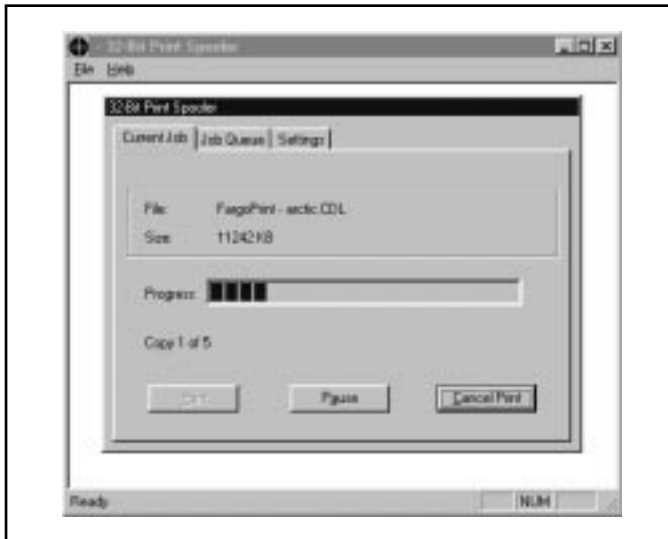
*Before installing updated 32-Bit Print Spooler versions, always uninstall the existing print spooler version from your system. To do this, simply select 32-Bit Print Spooler from the list of programs in the Add/Remove Programs Properties window and click on the **Add/Remove** button.*

To print with the 32-Bit Print Spooler, you must select the Fast 32-bit Spooler option from within the printer driver setup window (see Part E of this section for further printer driver setup information). When this option is selected, the 32-Bit Print Spooler will automatically open and close with the start and finish of each print job.

NOTE

You can also manually open the 32-Bit Print Spooler simply by selecting its icon from the Programs group of the Start menu.

When the 32-Bit Print Spooler is running, its icon will appear in the Windows 95 Task Bar. During a print job, it is often helpful to click on this icon to bring the 32-Bit Print Spooler status window to the foreground of your application. This window provides a number of details about the print jobs being sent to the Color Sign Printer.



The **Current Job** tab tells you the name and size of the file printing, the progress of the overall print job, as well as the total number of copies left to print. It also provides buttons which allow you to pause or cancel the print job at any time during the printing process.

The **Settings** tab tells you the port and printer to which you are printing and allows you to configure the timeout settings. In most instances, these settings will rarely need to be changed. This tab also provides an option called **Save last job for reprint**. When this option is selected, the 32-Bit Print Spooler will automatically save the last print job you sent to the Color Sign Printer and allow you to instantly reprint the job without the delay of having to re-rasterize it. The print job will be saved in the spooler until another print job is sent and

saved over it. If you do not wish to save the last print job for reprint, deselect this option. To print a saved job, simply select the **Print** button from the spooler's Current Job tab.

The **Job Queue** tab appears only when a print job is being sent to the printer. This tab tells you the name and status of each job in the queue and shows you the order in which the jobs will print if you have sent multiple jobs to the printer. A control button is also provided which allows you to delete every job listed in the queue. To delete the job currently being printed, simply select the Cancel Print button under the Current Job tab.

D. Configuring Your Computer's Parallel Port

As described in Part C of this section, the Color Sign Printer includes a software application program called the 32-Bit Print Spooler. **In order to use the 32-Bit Print Spooler, you must be using Windows 95, and your computer's parallel port mode must be set to ECP with a DMA channel assigned.** Although this may sound complicated, most computer's allow you to verify or change these settings quite easily. The follow steps will guide you through the general process of verifying and/or changing your parallel port settings.

NOTE

If your computer's parallel port is not ECP compatible or if you are printing from Windows 3.1x, you will not be able to use the Color Sign Printer's 32-Bit Print Spooler. Instead, print using the Write Direct To Port option within the Color Sign Printer's printer driver, or print directly through the print manager of Windows 3.1x or the system spooler of Windows 95. If printing through the system spooler of Windows 95, see page 73 for important printing tips.

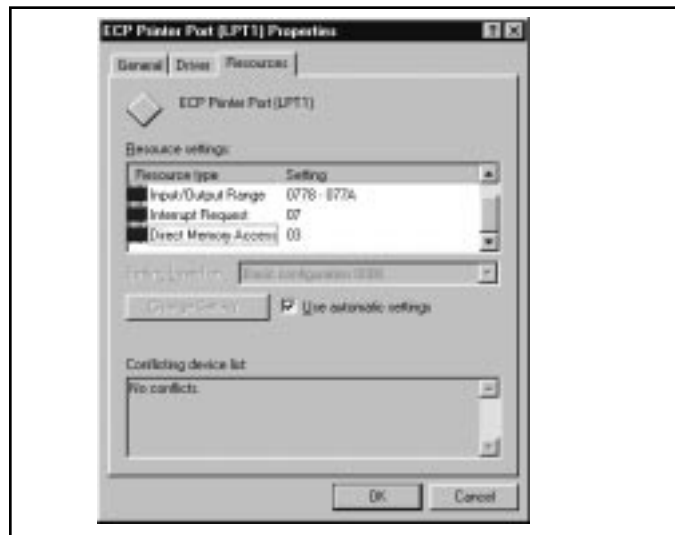
1. Click on the **Start** button, point to **Settings**, and select **Control Panel**.



2. Double-click on the **System** icon, select the **Device Manager** tab, select **View devices by type**, and double-click on the **Ports** listing.



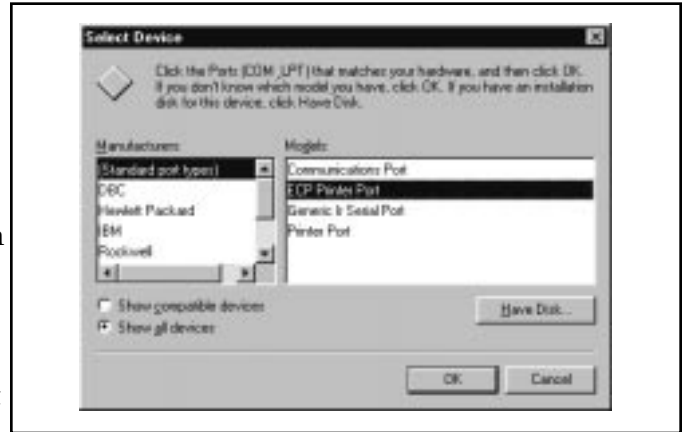
3. If your LPT port is set to "ECP Printer Port," double-click on this line, select the **Resources** tab, and verify that the Resource settings box has a line which says "Direct Memory Access," as shown here. This means that an available DMA channel is assigned. If you have both an ECP Printer Port setting and a DMA channel assigned, skip to step 7. If you have neither of these settings, go to step 4. If you have an ECP Printer Port setting but do not have an available DMA channel showing, go to step 6.



4. If, in Device Manager, your LPT port is set to "Printer Port" instead of "ECP Printer Port," you must change the parallel port mode through your system "BIOS" or setup screen. The system BIOS is generally entered by holding down a specific keyboard character while your computer is booting up. This keyboard character will differ depending on which brand of computer you have, but is often specified on screen during initial startup. For example, a line such as "Press key if you want to run SETUP..." may appear. Once you have entered the BIOS, use the on-screen directions to

locate the parallel port option and change it to ECP. When changed, save the BIOS settings and reboot (some computers require you to reboot twice). Then, as described in steps 1-3, go back to Device Manager in Windows 95, and verify that the LPT port registers as ECP and that a DMA channel is available.

5. If, in Device Manager, your LPT port still registers as "Printer Port," double-click on the **Printer Port** line, select the **Driver** tab, and click on the **Change Driver** button. Then, select the **Show all devices** option and choose the **ECP Printer Port** option from under Models as shown here. This will force Windows 95 to recognize your parallel port as ECP.



6. If, in Device Manager, your LPT port registers as "ECP Printer Port" but an available "Direct Memory Access" channel is still not showing under the Resources tab, you will not be able to use the 32-Bit Print Spooler. Instead, leave your parallel port set to ECP, and print with the **Write Direct To Port** option selected within the Color Sign Printer's printer driver (see Part E of this section for more printer driver information).

IMPORTANT!

Since the process of verifying and/or changing your computer's parallel port to ECP is largely dependent on your brand of computer, please refer to your appropriate computer documentation or contact the computer manufacturer for more information on this process.

7. Once you are sure that your computer's parallel port mode is set to ECP and that a DMA channel is available, you are ready to print with the 32-Bit Print Spooler. Before printing, select the **Fast 32-Bit Spooler** option from within the printer driver setup window along with all other appropriate printer driver options (see Part E of this section for more printer driver information).

8. If your printer does not seem to print properly with the 32-Bit Print Spooler even after you have properly setup your computer's parallel port, you may have an outdated parallel port driver. For this reason, the latest Microsoft® port driver is included on your printer driver diskette. To install this new driver, simply insert the printer driver diskette into your computer's disk drive, open the Windows 95

Explorer, select the “3¹/₂ Floppy” drive, and double-click on the file called **PRNT5UPD.EXE**. The updated parallel port driver will automatically install. Once it is installed, restart your computer and try your print job again.

If you are unable to set your computer as described in this setup procedure or if you have problems printing through the 32-Bit Print Spooler, refer to the troubleshooting tip, “I’m having problems printing from Windows 95” on page 73 for additional information.

E. Setting Up the Windows GDI Printer Driver

Before you can print to your Color Sign Printer, you will need to set the printer driver up with the appropriate print options for your specific print job. Refer to the following steps to change or verify your printer driver options.

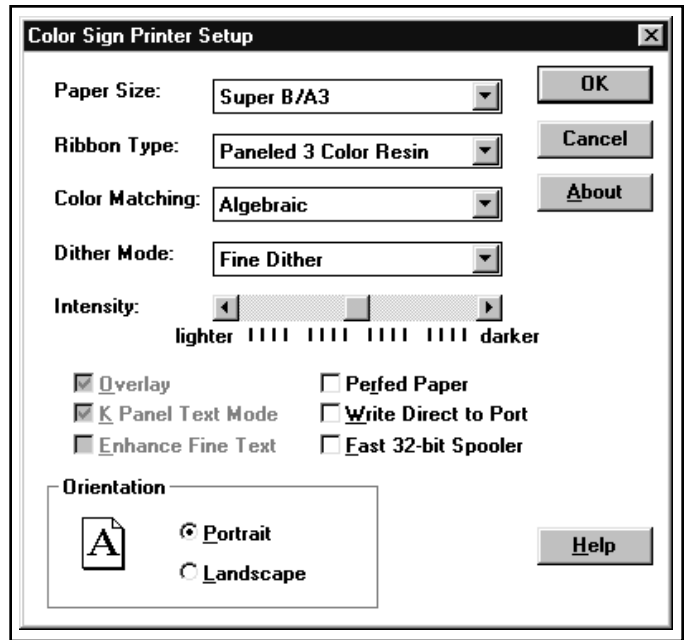
1. If using Windows 3.1x, go back to the Control Panel and the Printers group using steps 1 and 2 on page 29. If using Windows 95, Click the **Start** button, point to **Settings**, and select **Printers**. Then, click on the **Color Sign Printer** icon with the right mouse button and select **Properties**. The Properties window will appear.

2. In Windows 3.1x, select the **Setup** button. In Windows 95, click on the **Details** tab of the Properties window and select the **Setup** button.

NOTE

Most applications allow you to change these same printer driver options from their “Print” and/or “Printer Setup” screens. This means that you don’t have to go back to the main printer setup window each time you want to change a setting or option in the printer driver. These applications will usually give you the same choices and options, but in a slightly altered format.

3. The Color Sign Printer Setup screen appears. Change the options as follows:



Paper Size

Click on the **Paper Size** down arrow. A list of paper size selections will appear. Select the paper size option that matches the print media size currently installed in the printer. See Section 4-E and 4-I for additional paper size information.

Ribbon Type

Click on the **Ribbon Type** down arrow. A list of ribbon type options will appear. Select the option appropriate for the ribbon type currently installed in the printer. The following table explains each of these options. See Section 4-B for additional ribbon information.

Monochrome Wax	Select if using the monochrome black wax thermal ribbon.
3 Color Wax	Select if using the 4-color wax thermal ribbon and wish to print with only the first three yellow, magenta, and cyan color panels. Skipping the black panel increases print speed but will produce a "composite" black instead of a "true" black.
4 Color Wax	Select if using the 4-color wax thermal ribbon.
Monochrome Dye Sub	This ribbon type is currently not available.
3 Color Dye Sub	Select if using the 4-color dye-sublimation ribbon and wish to print with only the first three yellow, magenta, and cyan color panels. Skipping the black panel increases print speed but will produce a "composite" black instead of a "true" black.
4 Color Dye Sub	Select if using the 4-color dye-sublimation ribbon.
3 Color Dye Sub w/O	Select if using the 3-color FotoShield dye-sublimation ribbon with overlay.
Monochrome Resin	Select if using a spot-color resin ribbon to print a single or multi-spot-color sign. See Section 9-D or 9-E for more information on this printing process.

Processed 3 Color Resin	Select if using the yellow, magenta, and cyan spot color ribbons to print a full process color image. Skipping the black ribbon increases print speed but will produce a “composite” black instead of a “true” black. See Section 9-C for more information on this printing process.
Processed 4 Color Resin	Select if using the yellow, magenta, cyan, and black spot color ribbons to print a full process color image. See Section 9-C for more information on this printing process.
Paneled 3 Color Resin	Select if using the 3-color resin ribbon. This ribbon prints full-color images with no ribbon changes.
Paneled 4 Color Resin	Select if using the 3-color resin ribbon with a black spot-color resin ribbon. This provides full-color printing with a “true” black, while only requiring one ribbon change.

NOTE

When printing process color signage with the resin thermal print ribbons, the main reason for using the separate spot process color ribbons (Y,M,C,K), as opposed to the 3-color paneled resin ribbon, is to gain an extra 2” (51mm) in printable length. This additional length is achieved only when printing with the extended 12” x 26” (305 x 660mm) calendered vinyl.

Color Matching

Click on the Color Matching down arrow and select the appropriate color matching option. Select **None** if you are more interested in print speed rather than print color, if you have already color corrected your image for printing, or if you are using some other third party color matching software.

Select **Algebraic** if you would like the printer driver to make very simple, yet fast, color balance adjustments. This option gives you more natural looking images without actually utilizing any specific color matching software and without slowing down the processing speed of the printer driver.

Select the **FargoColor™** option to enable color matching profiles written specifically for your printer. The FargoColor option automatically adjusts the color of your image according to preconfigured printer profiles and default system profiles. This results in a very precise color match compliant with ICC standards.

NOTE

The FargoColor option is intended to match color hues as closely as possible. This means that although highly detailed, photographic images may be accurately matched, you may notice that some solid colors may appear slightly muted.

Since the default system profiles provided are generic, the colors of some monitors may still vary slightly from your output. As a solution, raw printer profiles are included in case you would like to combine your custom monitor profiles with the printer profiles. This can be done through many of the third-party color matching utility programs currently available.

Dither Pattern

This option allows you to choose between two types of dither patterns: **Fine** or **Coarse**. The **Fine** dither provides a print in which the dots of color are very close together, giving you increased clarity if the image is to be viewed up close. The **Coarse** dither provides a print where the dots are slightly larger and spaced further apart. This is a good option to select if you are printing images which may be viewed from further away. The Coarse option is also effective in hiding print imperfections if you are working in a particularly dusty environment. Since dye-sublimation images do not have a dither pattern, the dither pattern options are only selectable when printing with the resin thermal transfer or the wax thermal transfer print supplies.

Intensity

This control sets the lightness or darkness of the printed image. Click and drag on the slide's box, or click on the left and right arrows to change the amount of heat used in the printing process.

Overlay

This option only applies when printing with the 3-color FotoShield dye-sublimation ribbon (C,M,Y,O). Deselect this option if you wish to print dye-sublimation output without applying the ribbon's clear overlay panel. Please note that image durability will be minimal if this overlay is not applied. In most cases, the only time the overlay should not be applied when using this ribbon type is if you intend to heat transfer printed images to coated ceramic coffee mugs.

K Panel Text Mode

This option only applies when printing with a 4-color ribbon (C,M,Y,K). Select this option if you wish to print all gray scale TrueType text with the ribbon's black panel only. Normally, when printing gray scale or black text, the Color Sign Printer lays down all four of the ribbon's color panels. By laying down only the black panel, the Color Sign Printer is able to print black text with greater sharpness and definition. Processing time may increase when this option is selected. Please note that some applications may not support this option.

Enhance Fine Text

This option only applies when printing with a dye-sublimation ribbon type. When selected, this option allows the Color Sign Printer to apply a software-based spatial filter. This filter brings out the fine detail of smaller text and lines and allows them to print with much greater definition and clarity. Image processing time will increase when using this option.

Write Direct to Port

Selecting this option provides the fastest print processing if printing through a standard parallel port which is not ECP compatible, if printing exclusively from Windows 3.1x, or if having difficulty printing with the included 32-Bit Print Spooler. When selected, this option allows the printer driver to bypass the Windows 3.1x Print Manager or the system spooler of Windows 95 and to send all print data directly to the Color Sign Printer. This option devotes all of your system resources to the current print job, thereby increasing overall print speed. When the print job is finished, your system resources will again be released and devoted to the normal function of your on-screen applications.

Depending upon the processing speed and brand of your computer, you may or may not need to select this option when printing with the Color Sign Printer. For most computers with a non-ECP compatible parallel port, selecting this option will enhance the speed of the rasterizing and printing process. In this case, the **Write Direct to Port** option should be selected. For some computers, however, this option may not be supported by the particular brand of PC and should not be selected.

Fast 32-bit Spooler

Select this option for consistently faster print processing under Windows 95. This option is only selectable if operating under Windows 95 and if the included 32-Bit Print Spooler software has been installed. When selected, this option allows the printer driver to send all print jobs to the Color Sign Printer's 32-Bit Print Spooler rather than to the Windows 95 print spooler. See Part C of this section for complete details on the 32-Bit Print Spooler. This option and the 32-Bit Print Spooler software will not function in Windows 3.1x.

NOTE

When printing with the Fast 32-Bit Print Spooler or the Write Direct to Port option selected, the Print to File option found within many Windows application programs is not supported. The Print to File option is supported only when printing through the Windows system print spooler.

Perfed Paper

Select this option only if printing onto A-Long or A4-Long wax thermal transfer paper or transparency film with perfed extensions.

Orientation

Select either **Portrait** or **Landscape**. Selecting portrait causes the image to print in a vertical page orientation. Selecting Landscape causes the image to print in a horizontal page orientation. An icon illustrating the printed page helps you remember the difference between the two.

After your selections have been made, close out of the printer setup window. All printer driver options you selected will stay the same until you change them. Refer to Section 9 to start printing.

7

Using the Color Sign Printer with a Macintosh

A. Connecting the Color Sign Printer to your Macintosh

The Color Sign Printer is designed to be used with any Macintosh which supports Color QuickDraw, which is running system software 7.0 or higher, and which has a Geo-compatible serial port. Current GeoPort™ compatible computers include all PowerPC's and Mac AV's. Please note that the following system requirements are recommended:

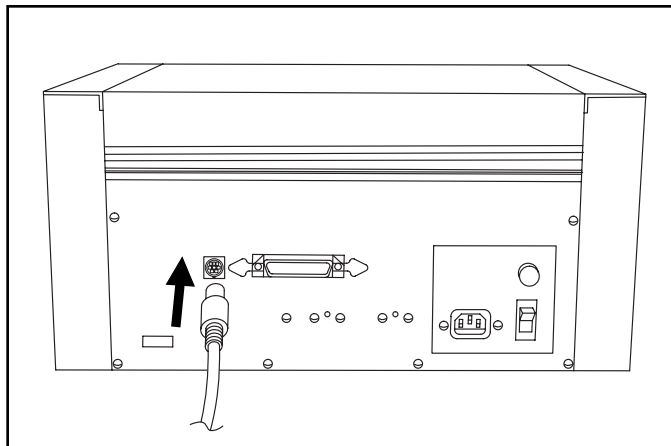
- 68040 based Macintosh or PowerPC
- 32 Mb RAM or higher
- 200 Mb free hard disk space or higher
- Geo-compatible serial port
- System software 7.0 or higher
- Adobe Type Manager™ and/or System 7/TrueType™ fonts

To connect the Color Sign Printer to your computer, simply obtain a high-speed serial cable and refer to the following steps.

NOTE

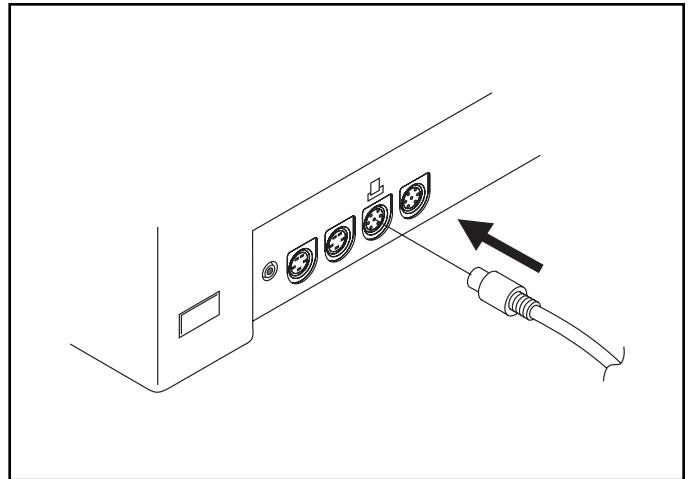
If you intend to use the Color Sign Printer with a Macintosh which does not have a GeoPort you will not be able to utilize the printer's serial port. Instead, you must install one of the manufacturer's high-speed centronics parallel interface boards into an available 7" NuBus™ slot on your computer's main board. If you have not already obtained this interface board, call the printer manufacturer's supplies department.

1. Connect one end of the serial cable to the Color Sign Printer's high-speed serial port.



2. Connect the other end to your computer's Printer or Modem port.

3. The Color Sign Printer must have its on-line LED light illuminated to receive data. If the light is not ON, verify that the printer power is ON, and press the on-line button.



NOTE

When connecting the Color Sign Printer to your computer, it is very important to always use a high-quality interface cable suitable for the Color Sign Printer's high-speed rate of data transmission. A suitable interface cable should be shielded and should be no longer than 6 feet in length.

B. Installing the Color QuickDraw Printer Driver Software

The Color Sign Printer can be used with virtually any Macintosh software application program. Before printing, however, you must tell the application that you're using the Color Sign Printer. This is accomplished the first time you use the printer by installing what is called a "printer driver." The printer driver is simply software which gives the Color Sign Printer the proper commands it needs in order to print.

The printer driver included with your Color Sign Printer is a Macintosh Color QuickDraw printer driver. The **QuickDraw printer driver** is a non-PostScript driver and is used for printing non-PostScript file formats such as a TIFF, JPEG, or PICT from non-PostScript applications.

As an option, the Color Sign Printer also has true **Adobe PostScript Level 2** software available. This optional software provides genuine PostScript support and is used only when printing PostScript files from a PostScript application. This software is not included with the Color Sign Printer and is only necessary if you intend to print PostScript files.

For full instructions on installing and using the Color Sign Printer's QuickDraw printer driver, refer to the remainder of this section. If you purchased the Adobe PostScript Level 2 software, refer to the User's Manual included with that software for complete instructions. Please note that

the QuickDraw printer driver packaged with the Color Sign Printer must be installed prior to installing and using the PostScript software.

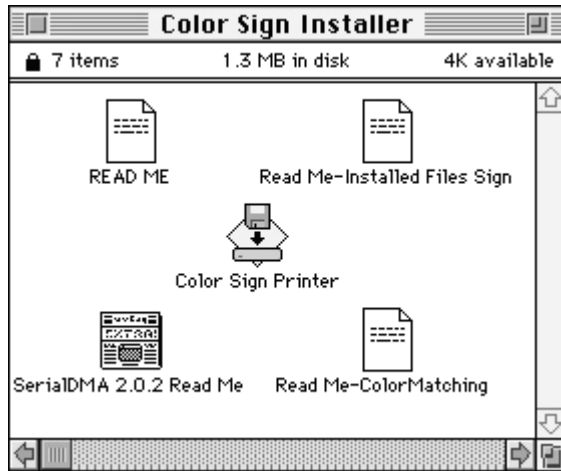
NOTE

This section of the Operator's Manual assumes that you are already familiar with the Macintosh operating system and know how it operates. If you are not yet familiar with it, consult the appropriate Apple documentation to become familiar with the basics of Macintosh before proceeding.

Please refer to the following steps to install the Color Sign Printer's Color QuickDraw printer driver:

1. Insert the supplied printer driver diskette into your computer's disk drive.

2. The Color Sign Printer Installer window will automatically open.



3. Double click on the READ ME file(s) to get the latest information about the driver and the installation process. Carefully read the document as it will help you get the best results from the printer driver software. Select **Quit** from the File menu when you are done reading.

4. Double click on the Color Sign Printer icon. The Installer dialog box appears.



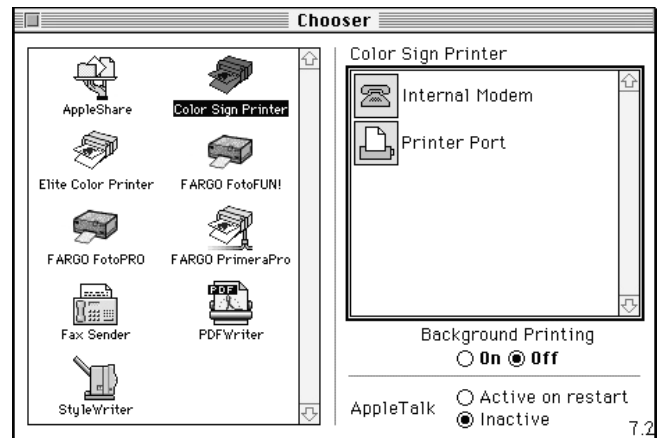
5. When the installer window appears, select the options you would like the installer program to install. In most instances, the default selections will suffice. For a description of each of these options, refer to the notes found in the box directly above these options (use the up and down arrows to scroll through the notes). Once the desired options are selected, click on Install. The appropriate files will automatically install onto your computer. Insert additional install disks as prompted. An alert box will display when installation is complete.

C. Choosing the QuickDraw Printer Driver

2. The Chooser displays an icon for all the printer drivers installed in the System Folder. Among these, you should see the icon for the Color Sign Printer printer driver you just installed. If you do not see the icon, go through the installation procedure again making sure the **Install driver and prefs** option is selected. Once you locate the Color Sign Printer icon, click on the icon to select it.

The Chooser is a Desk Accessory in the Apple menu. Before you can use the Color Sign Printer, you need to select the Color Sign Printer printer driver using the Chooser. This instructs your Macintosh to send print jobs to the Color Sign Printer instead of to some other printer you may already have connected to your system. Refer to the following steps to select the Color Sign Printer printer driver:

1. Select **Chooser** from the Apple menu.



3. Select either **Modem** or **Printer Port** to indicate to which port the serial interface cable was connected, and set AppleTalk to **Inactive**. (If you have the optional high-speed Centronics parallel interface board installed, select **Hurdler II CPI** as the appropriate output port.)

4. If you chose to install the Background Print Utility during the installation procedure, select either **On** or **Off** to enable or disable the Color Sign Printer's Background Printing function. When enabled, this function allows you to work in the

foreground of your application while printing in the background. Refer to Section 8 for more information on background printing. If you chose not to install the Backgrounder, the Chooser's Background Printing option will be inactive and grayed out.

5. Once your selections have been made, click on the box in the upper left-hand corner of the Chooser to close it.

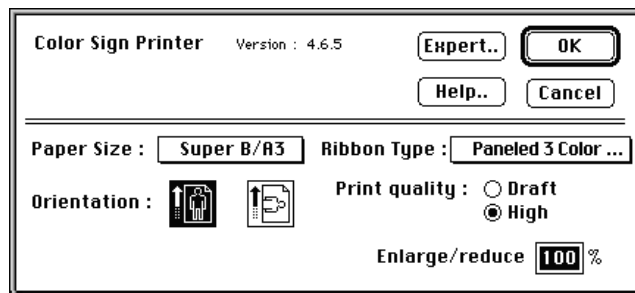
The next time you open the Chooser, the selected driver will no longer be highlighted. The Chooser remembers which driver is the current one but does not display it when opened.

D. Setting Up the QuickDraw Printer Driver

Once the printer driver has been successfully installed and selected within the Chooser, you will need to set the driver up with the appropriate print options for your specific print job. To change or verify your printer driver options, select **Page Setup** from the File menu, and configure the driver according to the following:

NOTE

Most applications allow you to change these same printer driver options from their own Page Setup screens. This means that you don't have to go back to the main printer setup window each time you want to change a setting or option in the printer driver. These applications will usually give you the same choices and options, but in a slightly altered format.



Paper Size

Click on the **Paper Size** box. A list of paper size selections will appear. Select the paper size option that matches the print media size currently installed in the printer. See Section 4-E and 4-I for additional paper size information.

Ribbon Type

Click on the **Ribbon Type** box. A list of ribbon type options will appear. Select the option appropriate for the ribbon type currently installed in the printer. The following table explains each of these options. See Section 4-B for additional ribbon information.

Monochrome	Select if using the monochrome black wax thermal ribbon.
3 Color Wax	Select if using the 4-color wax thermal ribbon and wish to print with only the first three yellow, magenta, and cyan color panels. Skipping the black panel increases print speed but will produce a “composite” black instead of a “true” black.
4 Color Wax	Select if using the 4-color wax thermal ribbon.
3 Color Dye Sub	Select if using the 4-color dye-sublimation ribbon and wish to print with only the first three yellow, magenta, and cyan color panels. Skipping the black panel increases print speed but will produce a “composite” black instead of a “true” black.
4 Color Dye Sub	Select if using the 4-color dye-sublimation ribbon.
B & W Dye Sub	This ribbon type is currently not available.
Mono Resin	Select if using a spot-color resin ribbon to print a single or multi-spot-color sign. See Section 9-D or 9-E for more information on this printing process.
Process 3 Color Resin	Select if using the yellow, magenta, and cyan spot color ribbons to print a full process color image. Skipping the black ribbon increases print speed but will produce a “composite” black instead of a “true” black. See Section 9-C for more information on this printing process.
Process 4 Color Resin	Select if using the yellow, magenta, cyan, and black spot color ribbons to print a full process color image. See Section 9-C for more information on this printing process.
Paneled 3 Color Resin	Select if using the 3-color resin ribbon. This ribbon prints full-color images with no ribbon changes.
Paneled 4 Color Resin	Select if using the 3-color resin ribbon with a black spot-color resin ribbon. This provides full-color printing with a “true” black, while only requiring one ribbon change.
CMYO Dye Sub	Select if using the 3-color FotoShield dye-sublimation ribbon with overlay.

NOTE

When printing process color signage with the resin thermal print ribbons, the main reason for using the separate spot process color ribbons (Y,M,C,K), as opposed to the 3-color paneled resin ribbon, is to gain an extra 2” (51mm) in printable length. This additional length is achieved only when printing with the extended 12” x 26” (305 x 660mm) calendered vinyl.

Orientation

Select the appropriate icon according to the orientation of your particular image.

Print Quality

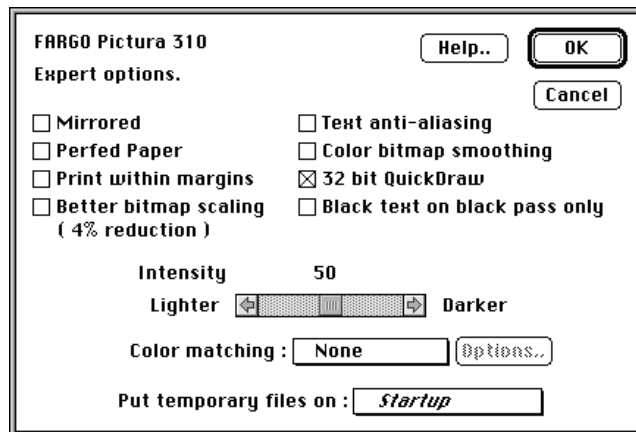
The Print quality option determines the resolution at which the document will be printed. Draft provides a quick print at screen resolution (72 dpi). High uses the maximum resolution supported by the Color Sign Printer which is 300 x 300 dpi. High quality prints take longer to print and require more memory.

Enlarge/reduce

This option alters the size of the printed image between the integers of 25% and 400%. A setting of 100% indicates the document will be printed at actual size. Please note that significantly enlarging or reducing the image may cause the image to appear pixelated or "jaggy" when printed.

Expert Options

The Color Sign Printer's driver has some options that rarely need to be changed. These options are contained within a separate **Expert options** dialog box accessed from Page Setup by clicking on the **Expert** button.



Save temp files for re-print

When this option is selected, the driver will automatically save the last print job you sent to the Color Sign Printer and allow you to instantly reprint the job without the delay of having to re-rasterize it. The print job will be saved until another print job is sent and saved over it. If you do not wish to save the last print job for reprint, deselect this option. To print a saved job, simply select the Re-Print button from the Print dialog box.

32 bit QuickDraw

Selecting this option increases the maximum number of colors the printer driver can print from 256 to 16.7 million and, in most cases, should always be selected.

Mirrored

When the Mirrored box is checked, the printer driver will print the image in a reversed format, making the printed image appear as if you were viewing it in a mirror. This is useful when printing images for heat transfers.

Perfed Paper

Select this option only if printing onto A-Long or A4-Long wax thermal transfer paper or transparency film with perfed extensions.

Print within margins

Most color printers cannot print over the entire piece of paper. There is often a non-printable margin that the printer mechanism physically cannot reach. Some applications do not take this non-printable margin into account when printing the document. The top left corner of the document on screen is positioned at the top left corner of the paper when printed. Selecting the Print within margins option in such applications forces the document to print at the top left corner of the printable area. Normally, you should not have to choose this option, since the application usually adds its margins to the non-printable margin of the printer.

Better bitmap scaling

When selected, this option reduces the distortion that can be seen sometimes in bitmaps and bit-mapped fonts when printed on a high-resolution printer. Bit mapped images are often stored and printed at screen resolution, 72 dots per inch (dpi). When a 72-dpi bitmap is printed on a high-resolution printer, the number of dots in the image must be increased. Each dot on the printer is smaller than a pixel on the screen; therefore, dots must be added to maintain the overall size.

The Color Sign Printer has a resolution of 300 dpi, so for every dot in the original bitmap, the driver theoretically has to put 4.2 dots across and down the page. Of course, the printer cannot put fractions of a dot on the paper. The driver therefore increases the number of dots by four, or sometimes by five, to even out the fractions.

Making the dots four or five times larger, however, can make the bitmaps look ragged. The Better bitmap scaling option works by enlarging the size of the print enough for all 72-dpi bitmaps to be printed with an integer dot increase. If this option is selected, however, the image printed will be reduced in size by 4%.

Enhance Fine Text

This option only applies when printing with a dye-sublimation ribbon type. When selected, this option allows the Color Sign Printer to apply a software-based spatial filter. This filter brings out the fine detail of smaller text and lines and allows them to print with much greater definition and clarity. Image processing time will increase when using this option.

Text anti-aliasing

This option is only available when printing with the dye-sublimation ribbon type. When selected, this option will improve the quality of printed text when using scalable fonts (System 7 TrueType or Postscript Type 1 fonts with Adobe Type Manager). Image processing time will increase when using this option.

Color bitmap smoothing

This option is only available when printing with the dye-sublimation ribbon type. When selected, this option will improve the appearance of lower resolution images (less than 100 DPI). Image processing time will be increased when using this option.

Black text on black pass only

This option only applies when printing with a 4-color ribbon (C,M,Y,K). Select this option if you wish to print all gray scale TrueType text with the ribbon's black panel only. Normally, when printing gray scale or black text, the Color Sign Printer lays down all four of the ribbon's color panels. By laying down only the black panel, the Color Sign Printer is able to print black text with greater sharpness and definition. Processing time may increase when this option is selected. Please note that some applications may not support this option.

Overlay

This option only applies when printing with the 3-color FotoShield dye-sublimation ribbon (C,M,Y,O). Deselect this option if you wish to print dye-sublimation output without applying the

ribbon's clear overlay panel. Please note that image durability will be minimal if this overlay is not applied. In most cases, the only time the overlay should not be applied when using this ribbon type is if you intend to heat transfer printed images to coated ceramic coffee mugs.

Dither Pattern

This option allows you to choose between two types of dither patterns: **Fine** or **Coarse**. The **Fine** dither provides a print in which the dots of color are very close together, giving you increased clarity if the image is to be viewed up close. The **Coarse** dither provides a print where the dots are slightly larger and spaced further apart. This is a good option to select if you are printing images which may be viewed from further away. The Coarse option is also effective in hiding print imperfections if you are working in a particularly dusty environment. Since dye-sublimation images do not have a dither pattern, the dither pattern options are only selectable when printing with the resin thermal transfer or the wax thermal transfer print supplies.

Intensity

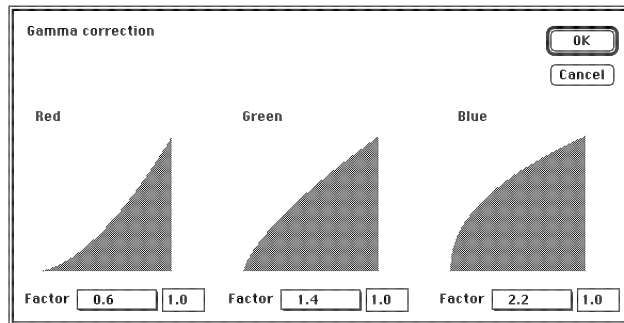
This control sets the lightness or darkness of the printed image. Click and drag on the slide's box, or click on the left and right arrows to change the amount of heat used in the printing process.

Color matching

Click on the Color Matching box and select the appropriate color matching option. Select **None** if you are more interested in print speed rather than print color, if you have already color corrected your image for printing, or if you are using some other third party color matching software.

When the **Gamma** method is selected, you can access the gamma correction method by clicking on **Options**. Through gamma correction, the printer driver allows you to individually increase or decrease the intensity of the red, green, and blue components of the print. A graphical representation of each gamma curve follows. A curve that bends inward (produced with a Gamma factor less than 1.0) darkens that color component. A curve that bends outward lightens it. A Gamma Factor of 1.0 produces a straight line that does not adjust the color component at all.

The Gamma correction values affect every color on the printed page, lightening or darkening the Red/Green/Blue values in each of those colors as



specified. The correction values you choose are stored separately for each document. If another document is opened, the previous correction values for that document are used.

Select the **FargoColor** option to enable color matching profiles written specifically for your printer. The FargoColor option automatically adjusts the color of your image according to preconfigured printer profiles and default system profiles. This results in a very precise color match compliant with ICC standards.

NOTE

The FargoColor option is intended to match color hues as closely as possible. This means that although highly detailed, photographic images may be accurately matched, you may notice that some solid colors may appear slightly muted.

Since the default system profiles provided are generic, the colors of some monitors may still vary slightly from your output. As a solution, raw printer profiles are included in case you would like to combine your custom monitor profiles with the printer profiles. This can be done through many of the third-party color matching utility programs currently available.

The **ColorSync™** option is available only if you selected the Install ColorSync 2.0 option from within the printer driver installer program when installing the Color Sign Printer's driver. The printer driver installation procedure is described in Section 7-B. Selecting the ColorSync option forces a ColorSync match to be performed on the image to be printed. The following ColorSync options are available:

NOTE

*In order for the ColorSync option to function properly, you must select the FARGO Default System profile for use with ColorSync. To select this profile, select **Control Panel** from the Apple menu, and double-click on **ColorSync System Profile**. Then, click on the **Set Profile...** button, select the **FARGO Default System (icc)** profile, and click on the **Select** button. The profile is now selected.*

Perceptual: All the colors of a given source profile are scaled to fit within the range of colors that can be printed. The colors maintain their relative positions, so the relationship between colors is maintained.

Solid Color Relative: All colors that fall within the range of both source and printer profiles are left unchanged. This type of color matching allows some colors to be exactly the same. A disadvantage of this type of matching is that many colors may map to a single color resulting in tone compression.

Saturation: The relative saturation of colors is maintained from the source to the printer. Colors outside the range of the printer are converted to colors with the same saturation, but different lightness.

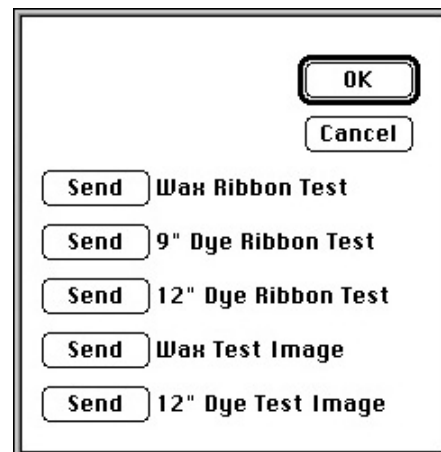
ColorSync also supports three different **Quality** levels: Best, Normal, and Draft. The better the quality, the longer the image will take to process. Choose these options accordingly.

Put temporary files on

This option allows you to specify the volume where the large temporary printer data files are stored. The files can be up to 75 megabytes in size. This option does not relocate where the Spool Files are saved. Spool Files are always saved on the Startup volume.

Cal... (Calibrate Button)

This option allows you to recalibrate your printer's ribbon sensor if the need should ever arise. For more information on the printer's ribbon sensor and on the calibration process, please refer to the end of Section 11-A. In most instances, this calibration procedure should not be necessary.



The Calibrate option also allows you to send a simple self test print to the printer by clicking on the **Send** button for either the Wax Test Image or 12" Dye Test Image. Be sure the appropriate B/ A3-Super size print supplies are installed for the type of test print you select. The 12" Dye Test works only with the 4-color (C,M,Y,K) dye-sublimation ribbon. This self test procedure can be helpful in assuring that your computer is effectively communicating with your printer and that your printer is functioning properly. If you would like to bypass your computer and print a self test directly from the printer, see the self test procedure described in Section 5-B.

After your selections have been made, select the **OK** button to save your printer driver selections and to exit the Page Setup window. All printer driver options you selected will stay the same until you change them. Refer to Section 9 to start printing.

8

Using the Print Backgrounder for Macintosh

A. Introduction

The Color Sign Printer printer driver for Macintosh provides a background print utility called the Print Backgrounder. This print utility is turned on or off through the Chooser. When the Backgrounder is turned on, it allows you to conveniently continue working in the foreground of your application while printing in the background. When Backgrounder is turned off, all print jobs are processed immediately in the foreground of your application. The Backgrounder offers many helpful features which are described further in this section.

B. Installing the Backgrounder

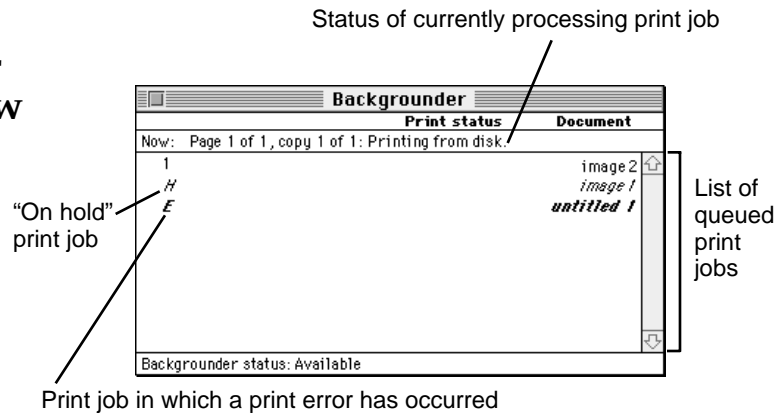
The Backgrounder is installed by selecting the **Install Background Print Utility** option from within the printer driver's installer program. This option is NOT selected by default, so if you did not select the Backgrounder option when installing the printer driver, it is most likely not installed. To install the Backgrounder, simply go through the printer driver installation procedure described in Section 7-B making sure that the **Install Background Print Utility** option is selected. The Backgrounder installs into the Extensions folder of your startup drive. Once installed, Backgrounder will automatically open and close with the start and finish of each print job. To manually open Backgrounder, double-click on the Print Backgrounder icon within the Extensions folder.

C. Printing with the Backgrounder

With the Backgrounder turned on in the Chooser, select **Print** from the File menu to print your image. A message appears telling you the image is being spooled to disk for Background/Later processing. Once the message disappears, background processing has begun so your application is free to be used for other work.

The print job is processed automatically by the Backgrounder. Other documents can be printed and, in turn, will be processed by Backgrounder. While Backgrounder is running, you can quit the current application and start another without disturbing your print jobs. Backgrounder processes all print jobs in the order in which they were sent to the printer.

D. The Backgrounder Status Window



The Backgrounder status window gives you detailed information about the status of the print job currently processing and about each print job waiting in the queue. The status of the job currently processing displays at the top of the status window. The message indicates how much of the job has been processed and displays any other relevant information. This line is blank if, for example, you manually start Backgrounder and no job is currently being processed.

The list of queued jobs displays below the current job in the order in which they were sent to the printer. Some applications, however, may put each page of the document into a separate spool file, creating a different job in the queue for each page. Print jobs are always added to the bottom of the queue. When the job currently processing is complete, the spool file for that job is deleted from the hard disk, and the top-most job in the queue is then processed.

Jobs that are "on hold" are displayed at the bottom of the job list in italic font. A job goes on hold when it has been canceled or when an error is detected during processing. An overall status message about the Backgrounder displays in the lower left corner of the window. The normal message is "Available," indicating that the Backgrounder can process jobs immediately or add them to the queue.

E. Backgrounder Menus

File menu

Open Status Window and Close Status Window: Opens and closes the Backgrounder status window. The Backgrounder continues to work if the status window is closed.

Log Files: The Backgrounder has the ability to create and maintain a sequential history file, or **Log** file, of Backgrounder print jobs. This Log file can

be enabled and manipulated with the following commands of the File menu:

New Log File: Selects a new file in which to maintain your ongoing Backgrounder printing log.

Save Copy of Log as: Saves the current Log file to a new file name or location of your specification.

Start Recording Log: Begins logging print history. Before the Log file is started, you are asked to specify a Log file in which to save your processed print job entries. When logging begins, this option dims.

Stop Recording Log: Stops logging print history. This option dims once print logging stops.

Get Info: Provides additional information about the currently selected print job. Click on the processing job or any job in the queue, before selecting Get Info. Double-clicking on a job in the status window is a shortcut for Get Info.

Quit: Exits the Backgrounder. Note that you cannot quit while a job is being processed (see **Stop Processing** on the following page). All jobs in the queue are retained and processed when Backgrounder is next started.

NOTE

The spool files are stored in the "Spool Folder," inside the "System Folder." If these files are deleted, the corresponding print jobs will be lost, and must be printed again.

Admin menu

Stop Processing: Stops the Backgrounder from processing any jobs, although it will still receive them and add them to the queue. A dialog box is displayed if Stop Processing is selected while Backgrounder is processing a job, asking when the job should be put on hold. The Backgrounder status box in the lower left-hand corner of the window indicates that Backgrounder has stopped.

You cannot quit from Backgrounder while it is processing a job. **Stop Processing** must first be selected to cancel the processing job and stop Backgrounder. When Backgrounder stops, the menu changes to **Continue Processing**. When this option is selected, the server starts processing the top job in the queue.

Preferences: Presents a dialog box containing options for fine-tuning the Backgrounder.

Background printing priority determines how much time your Mac spends processing the image,

and how much time it spends in the foreground application (interpreting mouse clicks, key presses, etc.). When the priority is set to **High**, Backgrounder processes the image faster, but the foreground application may become less responsive. With the priority set to **Low**, Backgrounder takes longer to process the image, yet the responsiveness of the other applications is improved.

Jobs menu

All commands in the Jobs menu act on the currently selected job.

Hold: Prevents an individual job from being processed. Jobs that are “on hold” are displayed in italic font at the bottom of the queue. Placing a job on hold is useful if you wish to create a print job at present, yet save its processing until later.

If **Hold** is selected on the job currently processing, the job is canceled before it is placed on hold. Canceling the current job can take some time, since the printer software may be performing a lengthy task that cannot be interrupted.

Remove Hold: Moves the job from the hold section of the list and places it at the bottom of the waiting queue.

Delete: Permanently removes the selected print job. The corresponding spool file is deleted from the Spool Folder. Use this command only when you are sure that you do not wish to process the job. Note that the job currently processing cannot be deleted (this happens automatically when it is printed successfully).

Move Job Up and **Move Job Down:** Adjusts the position of the selected job in the queue, allowing you to prioritize jobs. The queue is processed in top-to-bottom order.

F. Problems During a Background Print

Errors that are detected during a background print must be reported. The Backgrounder, however, cannot simply present a dialog box as soon as the error occurs, since the dialog could obscure work that is being done in the foreground. Error dialogs appear immediately, however, if the Backgrounder is in the foreground when the error is detected.

If operating in the background, Backgrounder stops processing until it is brought to the front. When Backgrounder detects an error, it beeps and visually indicates an error condition. This error condition is signaled by alternately flashing between the Application menu and the

Backgrounder icon. A small diamond symbol is also displayed next to the Backgrounder icon within the Application menu.

Complete and save any work in the foreground application before bringing the Backgrounder to the front. Once Backgrounder is in the foreground, the error dialog displays and processing continues or is canceled. Some errors force Backgrounder to stop processing all jobs.

G. Batch Printing

When configured properly, the Backgrounder can be used to process a large print run when the computer is not normally in use (for example, during a lunch break or overnight). This type of printing is called "batch" printing. To create a batch print, open Backgrounder by double-clicking on its icon within the Extensions folder. Once Backgrounder is running, select **Stop Processing** from Backgrounder's Admin menu. Then, print the required print jobs making sure Backgrounder is turned on in the Chooser.

The print jobs will be queued in Backgrounder in the order in which they were sent. Spool files for each of these print jobs will be created and stored on the hard disk and will remain on the hard disk until Backgrounder starts processing. Be aware that these spool files take up space on your hard disk and that you must leave at least 100 Mb of free hard disk space to print to the Color Sign Printer. When you choose to process your batch of print jobs, simply choose **Start Processing** from the Admin menu. Be sure the Color Sign Printer has enough supplies installed to print all of the print jobs stored within Backgrounder.

A. Interpreting the LED Indicator Lights

The Color Sign Printer communicates several different print conditions through the **cancel** and **on-line** LED indicator lights on the printer's front panel. It is very important that you understand what the various LED sequences mean in order to effectively operate the printer. Please refer to the following for an explanation of each LED sequence.

- **Both the cancel and on-line LED's are solid.**

This indicates that either the printer is ready to receive a print job or that it is in the middle of printing and experiencing no problems.

- **The cancel and on-line LED's are alternately flashing.**

This LED sequence only occurs when printing with spot-color resin ribbons. This sequence indicates that the printer has received print information and is ready to print. While the printer is in this mode, you can open the printer's cover to check that you have the appropriate resin ribbon installed or to switch resin ribbon colors. *Do not open the cover of the printer or switch ribbons during any other LED sequence if in the middle of a print job!* With the cover closed, press the cancel button to advance the ribbon (if necessary). Press the **on-line** button to begin printing with the currently installed ribbon.

- **Both the cancel and on-line LED's are flashing simultaneously.**

This LED sequence only occurs when the Monochrome Resin ribbon type option is selected and you are printing multiple copies of a single-spot-color sign. This sequence indicates that the printer is receiving additional print data during this very specific type of print job. When this sequence occurs, the printer is giving you two choices: **1.** You can continue to print on the sheet of vinyl currently in the printer by pressing the on-line button. —or— **2.** You can eject the current sheet of vinyl and begin printing on a new sheet by pressing the cancel button. Once you have made your choice and have pressed the appropriate button, the printer will then switch to the alternately flashing LED sequence. This indicates that the printer is now ready to print the data it is receiving.

9

Printing with Your Color Sign Printer

B. Printing a Process Color Image with a Paneled Ribbon

- **The on-line LED is flashing quickly.**

This indicates that you may be out of print media or print ribbon. Replace media as required. This can also indicate that print media is not properly feeding. If, for any reason, the printer is unable to feed media or advance the ribbon after several seconds of trying, it will time out and the on-line light will flash. Correct the problem and press the **on-line** button to continue printing. If you experience a severe media jam, you may need to cancel and restart your print job. See the troubleshooting tip, "The on-line LED light is flashing rapidly," in Section 11-A for additional information on this condition.

- **The on-line LED is flashing (or pulsing) slowly.**

This indicates a data transmission error. See the troubleshooting tip, "The on-line LED light is flashing (pulsing) slowly," in Section 11-A for additional information on this condition.

To print a process color image using the 3-color resin ribbon or any of the wax thermal or dye-sublimation ribbons, refer to the following steps.

1. Go to your graphics application program.
2. Open or create the image file you wish to print. For best results, use 24-bit color, 300 dpi (or higher) images. If your design includes photos or bitmap images, print at an image size of approximately 100%. Over-enlarging such an image or printing lower dpi images will cause your printed image to appear jaggy or pixelized when printed. Also, always prepare and save color images in an RGB color mode, not CMYK, when using the Color Sign Printer's standard printer driver. The Color Sign Printer's printer driver software must be given RGB images in order to print colors accurately.
3. After you have opened or created an image, select **Printer Setup** or **Page Setup** from the application's File menu and verify that the appropriate printer driver options are selected. Be sure to select the appropriate Paper Size and Ribbon Type option (see Section 6-E or 7-D). Once the driver is set, select **Print** from the File menu to print your image.
4. The Color Sign Printer's RIP (raster image processing) begins. Depending upon the complexity of the image and the processing speed of your computer, it will take from just a few

seconds to several minutes for printing to begin. Generally, photos and complicated graphics take longer to RIP.

5. Once rasterization is complete, the Color Sign Printer will feed in a sheet of print media and begin printing. The Color Sign Printer always prints the Yellow panel first followed by the Magenta panel and the Cyan panel. If the installed ribbon includes a Black panel or an Overlay panel, this panel will print last. Wait until all panels have printed and the sheet is fully ejected before trying to pull it out of the printer.

C. Printing a Process Color Image with Spot-Color Resin Ribbons

In order to print a full 24" (610mm) image on the extended 12" x 26" (305 x 660mm) calendered vinyl, you must use the separate spot-color resin ribbons of **Yellow, Magenta, Cyan, and Black** (Y,M,C,K). In most cases, this is the only reason you would want to print a process color image using these separate spot-color resin ribbons instead of the 3-color paneled resin ribbon.

The Color Sign Printer allows you to print a process color sign by using either three (Y,M,C) or four (Y,M,C,K) of these spot-color ribbons. The only difference is that a three color print process will produce full-color output with a "composite" black, where as a four color print process will produce full-color output with a "true" black. The benefit of the three color print process is that images print up to 25% faster and are up to 20% less expensive since the black ribbon is not used.

To print a process color sign using the separate spot-color resin ribbons of yellow, magenta, cyan, and black, refer to the following steps.

- 1.** Load the yellow ribbon into the printer and close the printer's cover.
- 2.** Go to your graphics application program.
- 3.** Open or create the image file you wish to print. For best results, use 24-bit color, 300 dpi (or higher) images. If your design includes photos or bitmap images, print at an image size of approximately 100%. Over-enlarging such an image or printing lower dpi images will cause your printed image to appear jaggy or pixelized when printed. Also, always prepare and save color images in an RGB color mode, not CMYK, when using the Color Sign Printer's standard printer driver. The Color Sign Printer's printer driver software must be given RGB images in order to print colors accurately.

4. Select **Print Setup** or **Page Setup** from the File menu of your program.
5. Select **Processed 4 Color Resin** from the Ribbon Type option to print with the printer's 4-color print process or **Processed 3 Color Resin** to print with the 3-color print process. The introduction at the beginning of this section explains the difference between the two. While in the Print Setup window, also check that all of the other appropriate printer driver options are selected. Once all appropriate options are selected, exit the setup window.
6. Select **Print** from the File menu of your program to print your image.
7. The Color Sign Printer's RIP (raster image processing) begins. Depending upon the complexity of the image and the processing speed of your computer, it will take from several seconds to several minutes for printing to begin. Generally, photos and complex graphics take longer to raster than images composed primarily of text or simple graphics.
8. Once rasterization is complete, a sheet of print media will feed into the printer and out onto the Media Tray Cover, then it will retract back into the printer and pause. When the printer pauses, the cancel and on-line LED lights will begin alternately flashing, signaling that the printer is ready to print.
9. Press the **on-line** button to begin printing with the yellow ribbon. When the yellow pass has finished printing, the vinyl will again retract back into the printer and then pause. Once the sheet is fully retracted, the cancel and on-line LED lights will begin alternately flashing. At this time, open the printer's cover, remove the yellow ribbon, load the magenta ribbon, and close the cover. *Do not open the cover of the printer before the cancel and on-line lights begin flashing or after they have stopped!* This will cancel your print job. While printing, you can only open the printer's cover or change ribbons when the cancel and on-line lights are alternately flashing.
10. Once the magenta ribbon is installed and the printer cover is closed, press the on-line button to begin printing the magenta pass.
11. Repeat this cycle for the remaining ribbon colors. Remember, the ribbon order for printing process color signage is **Yellow, Magenta, Cyan, and Black**. If printing with the 3-color print process, the print media will automatically eject after the cyan pass has finished printing. If printing

with the 4-color print process, the print media will automatically eject after the black pass has finished printing.

D. Printing a One Color Image with a Spot-Color Resin Ribbon

This section offers an example of how to print a standard spot color sign which has only one color. Refer to the following steps to begin printing.

1. Go to your graphics application program.
2. Open or create the image you wish to print. Depending upon your application program, you may need to change the color of your single color image to black in order to achieve an entirely solid color when printed. The reason for this is that if you were to send a color other than black (blue or red for example), a gray scale interpretation of that color could be sent to the printer giving your output a grainy or "dithered" quality instead of a solid, saturated quality.
3. Select **Print Setup** or **Page Setup** from the File menu of your program.
4. Select **Monochrome Resin** from the Ribbon Type options. While in the Print Setup window, also check that all of the other appropriate printer driver options are selected. Once all appropriate options are selected, exit the setup window.
5. Select **Print** from the File menu to print your image.
6. The Color Sign Printer's RIP (raster image processing) begins. Depending upon the complexity of the image and the processing speed of your computer, it will take from several seconds to several minutes for printing to begin. Generally, photos and complex graphics take longer to raster than images composed primarily of text or simple graphics.
7. Once rasterization is complete, a sheet of print media will feed into the printer and out onto the Media Tray Cover, then it will retract back into the printer and pause. When the printer pauses, the cancel and on-line LED lights will begin alternately flashing, signaling that the printer is ready to print.
8. When these lights begin flashing, you have two choices: **1.** You may press the on-line button to begin printing with the currently installed ribbon. —or— **2.** You may open the cover of the printer to verify that the proper ribbon is installed or to load another ribbon altogether. In either case, the printer's cover must be closed and you must press

E. Printing a Multi-Spot-Color Image with Spot-Color Resin Ribbons

the on-line button to begin printing. *Do not open the cover of the printer before the cancel and on-line lights begin flashing or after they have stopped!* This will cancel your print job. While printing, you can only open the printer's cover or change ribbons when the cancel and on-line lights are alternately flashing.

9. After your single-color image has printed, the print media will again be retracted back into the printer. The reason for this is explained in Part E of this section. To eject your finished single-color sign from the printer, press the printer's cancel button.

In addition to printing process color or one color signage, the Color Sign Printer is also able to print several separate spot colors onto a single sheet using any combination or number of resin ribbon colors. To do this, you simply place each color of your digital image on a separate "layer" within your design and send each layer to the printer as a separate print job. To separate and print your image by layers, please refer to your specific graphics application program documentation. To operate your Color Sign Printer during this print process, please refer to the following steps.

1. Load the appropriate spot color ribbon into the printer.

2. Select **Print Setup** or **Page Setup** from the File menu of your program.

3. Select **Monochrome Resin** from the Ribbon Type options. While in the Print Setup window, also check that all of the other appropriate printer driver options are selected. Once all appropriate options are selected, exit the setup window.

4. Send the first layer of your image to the printer by selecting **Print** from your program's File menu. Depending upon your application program, you may need to change the color of that layer to black in order to achieve an entirely solid color when printed. The reason for this is that if you were to send a color other than black (blue or red for example), a gray scale interpretation of that color could be sent to the printer giving your output a grainy or "dithered" quality instead of a solid, saturated quality.

5. The Color Sign Printer's RIP (raster image processing) begins. Depending upon the complexity of the image and the processing speed of your computer, it will take from several seconds to several minutes for printing to begin. Generally,

photos and complex graphics take longer to raster than images composed primarily of text or simple graphics.

6. Once rasterization is complete, a sheet of print media will feed into the printer and out onto the Media Tray Cover, then it will retract back into the printer and pause. When the printer pauses the cancel and on-line LED lights will begin alternately flashing.

7. When these lights begin flashing, you have two choices: **1.** You may press the on-line button to begin printing with the currently installed ribbon. —or— **2.** You may open the cover of the printer to verify that the proper ribbon is installed or to load another ribbon altogether. In either case, the printer's cover must be closed and you must press the on-line button to begin printing. ***Do not open the cover of the printer before the cancel and on-line lights begin flashing or after they have stopped!*** This will cancel your print job. While printing, you can only open the printer's cover or change ribbons when the cancel and on-line lights are alternately flashing.

8. After the first color pass has printed, the print media will again retract back into the printer and pause, however, the cancel and on-line lights will remain solid. ***Do not open the printer's lid to change ribbons at this time!*** Remember, you can only open the printer's cover or change ribbon's when the cancel and on-line lights are alternately flashing.

9. Send the second layer of your image to the printer by selecting **Print** from the program's File menu.

10. Once the image is finished rastering, the cancel and on-line lights will once again begin alternately flashing.

11. Open the printer's cover, remove the first layer's ribbon color, load the second layer's ribbon color, and close the cover.

12. Press the **on-line** button to begin printing the second layer.

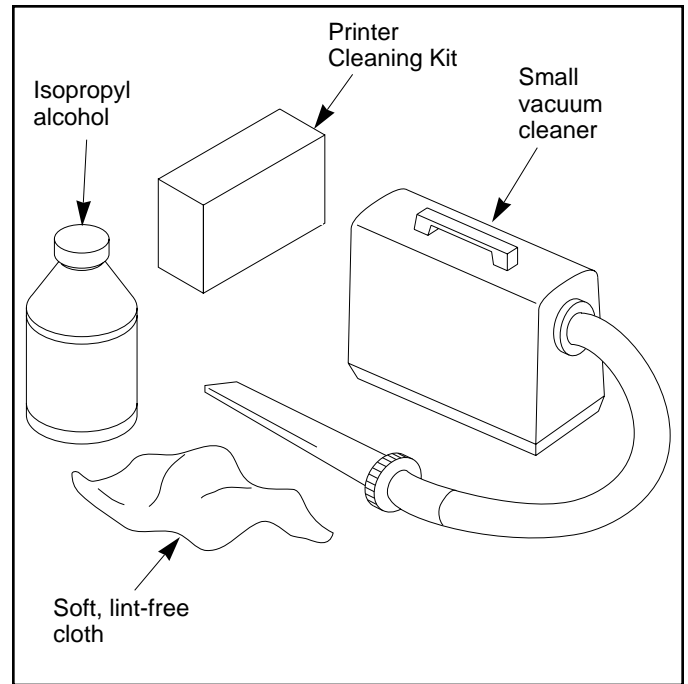
13. When the second pass is finished printing, the print media will again retract and the printer will wait for the next layer to be sent. If you are only printing two layers, press the **cancel** button to eject your finished sign. If you are printing more than two layers, continue this process for each additional layer of your design.

10

Maintenance

The Color Sign Printer is built to require a minimum amount of maintenance. Nevertheless, there are a few procedures you can perform on a regular basis or as needed to ensure the best possible performance.

A. Supplies Required



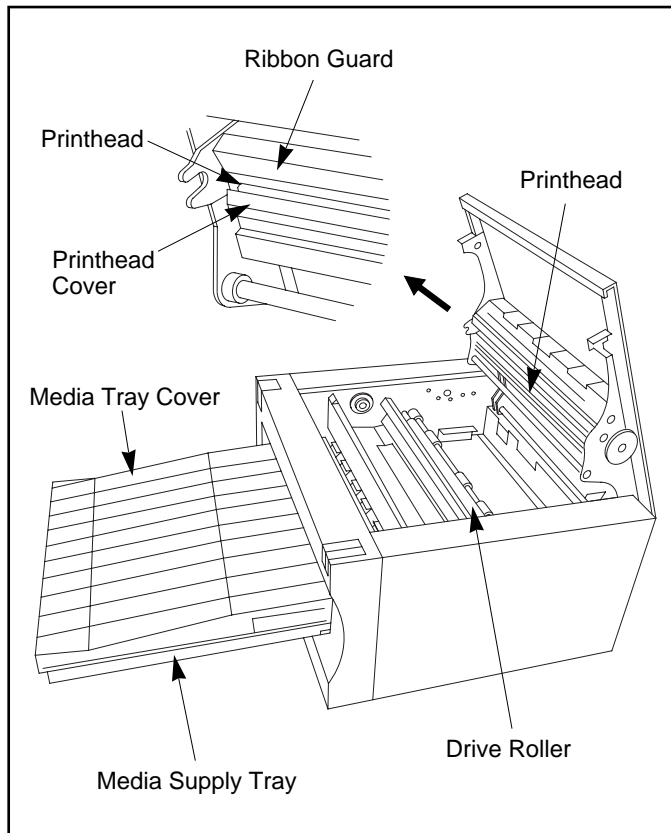
For the procedures listed in this section, you will need the following items:

- Isopropyl alcohol
- Soft, lint-free cloth
- Small vacuum cleaner (if available)

Or, to make these maintenance procedures more convenient, a Printer Cleaning Kit is available from your authorized reseller or the printer manufacturer. This optional kit includes the following:

- **Printhead Cleaning Pens** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's printhead.
- **Cleaning Pads** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's rollers and general inside area.

Use the following illustration to locate the items discussed in this section:



B. Cleaning the Printhead

This procedure is performed if you notice a streak running the length of the page where color was not transferred.

1. Open the printer's Top Cover by pressing the Cover Release Button.
2. Remove the Ribbon Cartridge from the printer.
3. Use a Printhead Cleaning Pen from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol to wipe dust and other accumulated particles off the surface of the printhead. If using a cloth, be extremely careful not to use too much alcohol. It must not be allowed to drip into the printer!
4. Allow the printhead to thoroughly dry before re-installing the Ribbon Cartridge.
5. Re-install the Ribbon Cartridge, and shut the cover. If a streak persists, Contact Technical Support for further assistance (see Section 11 for Technical Support information).

IMPORTANT!

Never use a sharp tool or a metal object of any kind to clean the printhead. You will damage the printhead!

C. Cleaning the Printer's Case

Your Color Sign Printer has a durable casing that should retain its luster and appearance for many years. Clean it with a Cleaning Pad from the Printer Cleaning Kit or a soft, lint-free cloth slightly moistened with water or a mild soap. Do not use excess water or cleaning solvents of any kind. Never spray the cabinet with a cleaner. Rather, spray the cloth first, and then wipe down the printer.

D. Cleaning the Inside of the Printer

As you use your Color Sign Printer, dust and paper particles will accumulate inside the printer's case. These particles are attracted to the underside of the ribbon by static produced during printing and can cause voids on the printed image. Periodically, use the following procedure to remove dust and paper particles.

1. Open the printer's Top Cover by pressing the Cover Release Button.
2. Remove the Ribbon Cartridge from the printer.
3. Remove the Media Tray Assembly and remove its print media.
4. If you have access to a very small vacuum cleaner (most computer stores sell devices just for this purpose), use it to vacuum out all visible areas inside the printer. If you don't have such a device, use a Cleaning Pad from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol to thoroughly wipe out the entire interior of the printer. Also, wipe out the inside of the Media Supply Tray. **Be extremely careful not to let any alcohol drip inside the printer's case.**
5. Re-install the Media Tray Assembly and Ribbon Cartridge, and close the printer's cover.

E. Clearing a Print Media Jam

If a sheet of print media becomes jammed inside the printer, remove it through the following steps.

1. Leave the power on and open the cover of the printer by pressing the Cover Release Button.
2. Remove the Ribbon Cartridge.
3. Press cancel button to advance the print media. Press the on-line button to reverse it.

4. Press the cancel button to clear its input buffer memory. Select the Cancel button (or equivalent) in your application program. Start the print over again.

F. Clearing a Ribbon Jam

If the ribbon becomes jammed in the printer's drive roller (visible when you open the printer's top cover), use the following procedure to correct the problem.

1. Leave the power on and open the cover of the printer by pressing the Cover Release Button.
2. Remove the ribbon take-up core (the side with used ribbon on it) from the Ribbon Cartridge.
3. Gently pull the ribbon up and out of the printer while pressing and holding down the printer's on-line button. This will rotate the drive roller backwards and eject the ribbon while you are pulling gently upwards.
4. If any ink is visible on the drive roller, clean it according to the steps in Part G of this section.

G. Cleaning the Drive Roller

Periodically, you should clean the printer's drive roller. This helps to prevent jams and registration problems and helps maintain uninterrupted service. Also perform this procedure if you notice any ink on the drive roller. Use the following steps to clean the roller.

1. Remove the Ribbon Cartridge.
2. Locate the drive roller. It is the long, black rubber roller in the center of the printer's interior.
3. Use a Cleaning Pad from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol to thoroughly wipe the roller clean. While wiping, press the cancel and on-line buttons to rotate the roller. **Be extremely careful not to let any alcohol drip inside the printer's case!**
4. After the roller is clean and completely dry, replace the Ribbon Cartridge and close the printer's cover.

H. Cleaning the In-Feed Rollers

The In-Feed Rollers are visible when the printer's Media Tray Assembly is removed. These rollers serve to pull print media out of the Supply Tray and feed it up into the printer. This procedure should be performed only if your printer consistently seems to be having difficulty pulling in blank print media from the Media Supply Tray. If you do not experience such difficulty, you do not need to clean these rollers. Use the following steps to clean the In-Feed Rollers.

- 1.** Remove the Media Tray Assembly from the printer.
- 2.** Looking straight into the printer's front opening, locate the two gray In-Feed Rollers.
- 3.** Use a Cleaning Pad from the Printer Cleaning Kit or a soft, lint-free cloth *slightly* moistened with isopropyl alcohol to thoroughly wipe the rollers clean. While wiping, manually rotate the rollers with your fingertips.
- 4.** After the rollers are clean and *completely dry*, replace the Media Tray Assembly.

A. General Troubleshooting for the Color Sign Printer

If you have difficulty operating your Color Sign Printer, the troubleshooting suggestions in this section should, in most cases, solve the problem. If you still have difficulty after trying these suggestions, call Technical Support. Customer and technical support representatives are available Monday through Friday, 7:30 AM to 5:30 PM Central Standard Time. To contact a technical support representative, call (612) 941-8121 or FAX (612) 941-1852. You may also leave a message 24-hours a day if you would like to have a representative call you back the next business day.

Technical support and printer driver upgrades can always be obtained free of charge by connecting to the factory's Bulletin Board or to their World Wide Web Home Page. The Bulletin Board number is (612) 942-7958. The World Wide Web Home Page address is <http://www.fargo.com>. If you would like to e-mail a question, mail to support@fargo.com.

The printer doesn't work at all.

Symptoms: Nothing happens or an error message comes up in the application program.

- Make sure that the power cord is plugged in securely on both ends and that the printer is turned on. Confirm power is applied. The green LED above both the cancel and the on-line buttons should be illuminated.
- Make certain that the printer cable is securely connected. An error message in the software application telling you that the printer is not responding is often due to a missing or defective parallel interface cable.
- If your computer seems to raster the image and send it to the printer, but the printer does not react at all, you may be in need of more hard disk space for the size of your image. You should have enough space on your hard disk for at least double the size of the file you are trying to print.

The on-line LED light is flashing rapidly.

This indicates an error has occurred with the print media or with the print ribbon. If such an error occurs before the Color Sign Printer actually starts to print, the error is recoverable. Correct the problem and press the on-line button to resume printing. If the error occurs after the Color Sign Printer starts printing, you must correct the problem, reset the printer by pressing the printer's cancel button, and cancel and resend the print job

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Troubleshooting

from your application. Refer to the following list for possible causes to this printer error condition.

- Check that you have properly loaded print media and a print ribbon and that you have not run out of either. Replace media as required (see Section 4).
- Make sure the Ribbon Type option selected in the printer driver matches the type of ribbon currently installed in the Color Sign Printer (see Section 6-E or 7-D for Ribbon Type information).
- Check that you have loaded compatible print supplies according to the descriptions given in Section 4. Remember, dye-sublimation, resin thermal, and wax thermal supplies are not interchangeable.
- Check to see if the print media is jammed or is not feeding effectively from the Media Supply Tray. If jammed, clear according to Section 10-E. If not feeding, separate the print media to assure it is not sticking together. You may also need to clean the In-Feed Rollers according to Section 10-H.
- Check to see if the ribbon is jammed down into the Drive Roller. If so, clear the jam according to Section 10-F.

The on-line LED light is flashing (pulsing) slowly.

This indicates a data transmission error. In other words, the Color Sign Printer is not properly receiving the print data. If such an error occurs, you must correct the problem, reset the printer by pressing the printer's cancel button, and cancel and resend the print job from your application. Refer to the following list for possible causes to this printer error condition.

- If you have canceled the printer during a print job, is the computer still trying to send the print job? If so, cancel the print job in the software and resend it.
- This condition can sometimes be caused by using a substandard interface cable. Always use high-quality serial cable for Macintosh or a shielded, bi-directional parallel cable (preferably an I-EEE 1284 type cable) for Windows. For best results, interface cables should be no longer than 6 feet in length.
- Do you have the Color Sign Printer connected through a switch box? If so, connect the Color Sign Printer directly to your computer. Do not connect the Color Sign Printer through a switch box, as this can interfere with the flow of print data.

I'm having problems printing from Windows 95.

- If flashing slowly and you are printing from a Macintosh, you may have the printer connected to a serial port which has been added on to your computer's main board. Such add-on ports may not be fast enough to sustain the printer's high-speed rate of data transmission. To solve this problem, connect the printer to one of your computer's built-in ports such as the Printer or Modem port. Keep in mind, however, that you must be using a Geo-compatible serial port.
- If using the print manager of Windows 3.1x or the standard print spooler of Windows 95, and your printer starts printing and stops, you may need to increase your Transmission Retry Value from 45 to 900. To do this in Windows 3.1x, go to **Control Panel**, click on the **Printers** icon, and select the **Connect** button. To do this in Windows 95, click the **Start** button, point to **Settings**, and select **Printers**. When the Printers window appears, click on the **Color Sign Printer** icon with the right mouse button and select the **Properties** option. Then, click on the **Details** tab.
- Print with either the **32-Bit Print Spooler** or the **Write Direct to Port** option selected from within the printer driver setup (see Section 6-C, D, and E for more information on these options). In most cases, one or the other of these options will provide the best results when printing from Windows 95.
- Due to the wide variety of PC hardware and software configurations, however, some systems may print more effectively through the system spooler of Windows 95. If you choose not to print with either the 32-Bit Print Spooler or the Write Direct to Port option selected, but instead wish to print through the system spooler of Windows 95, the following tip will help you optimize your system for printing:
 1. Click the **Start** button, point to **Settings**, and select **Printers**. When the Printers window appears, click on the Color Sign Printer icon using the *right* mouse button and select the **Properties** option.
 2. Select the **Details** tab, then select the **Spool Settings** button.
 3. Select the **Print directly to the printer** option and click on **OK**.
 4. Again from the Details tab, select the **Port Settings** button.

5. Deselect both the **Check Port state before printing** option and the **Spool MS-DOS print jobs** option, and click on **OK**.

6. Lastly, increase the **Transmission retry** value of the Details tab from 45 to **900**. Click on **OK** to close the Properties window.

The print media or ribbon is jammed.

Symptoms: The Color Sign Printer stops printing and the Printer on-line LED light is flashing.

- Check that you have properly loaded print media and a print ribbon according to the instructions in Section 4. Be sure the print media is loaded with the print side facing down.
- Check that you have loaded compatible print supplies according to the descriptions given in Section 4. Remember, dye-sublimation, resin thermal, and wax thermal supplies are not interchangeable.
- If the print media is not feeding effectively from the Media Supply Tray, separate the print media to assure it is not sticking together. You may also need to clean the In-Feed Rollers according to Section 10-H.
- Clear all jams according to Section 10.

Symptoms: Random lines appear in output that travel the entire length of the print, from top to bottom.

- Most likely due to dust or other debris on the printhead. Review the proper procedures for printhead cleaning in Section 10-B.

Symptoms: Small spots appear randomly on the print with no ink or different colors of ink.

- Most likely due to dust inside the printer. Review the procedures in Section 10-D for cleaning the inside of the printer.
- Can also be caused by dust accumulation on the ribbon or print media. Always store print supplies in the original packaging or in some other suitable dust-free environment when not in use.

My prints have thin lines in them.

My prints have blotches or spots in them.

My prints have poor or faded print quality.

- Be sure you have the appropriate supplies installed. Do not, for example, use dye-sublimation ribbon or paper if you have a wax thermal transfer ribbon type option selected in your printer driver setup, or vice versa. The dye-sublimation, resin thermal and wax thermal print methods require their own separate and specific set of supplies. Review Section 4 for complete information on all print supplies.
- Print media is upside down. Be certain that you are loading print media with the print side facing down. The print side of the Color Sign Printer's media is always the smoother, white, glossy side or the non-backing side if using #300-Series media.
- Wax thermal paper or #300-Series media is not of a good enough quality. For best results, always use factory-brand print media since it is specifically designed for use with the Color Sign Printer.
- You are using too much heat or not enough heat to properly transfer ink. Adjust the Intensity control in the Color Sign Printer's printer driver up or down as needed.

My Dye-Sublimation prints look very dithered or pixelated.

Symptoms: Prints do not look smooth or continuous, but rather grainy and unclear.

- Some applications have selections you must enable in order for the Color Sign Printer to use its own dither patterns. For best output, you should always use the Color Sign Printer's dither patterns. Refer to your application program's instruction manual or contact the software manufacturer for details on how such selections are enabled.
- For best photo-realistic output, you should always use high resolution 24 bit images. If scanning an image, always scan the image at a 24 bit color setting, at the same approximate size at which you will be printing, and at 300 dpi. If you stretch or "blow up" a small or low resolution image, you will always get a pixelated or grainy effect when printing.

The print media feeds and acts like it is printing, but nothing is printed.

Symptoms: Printer sounds like everything is fine, but no image.

- You may have loaded the ribbon upside down. Open the printer's top cover and check that the ribbon is loaded properly according to Section 4. Give the printhead a thorough cleaning (see Section 10-B for printhead cleaning instructions). Be careful not to damage the printhead.
- The ribbon may have been loaded backwards. This causes no harm. Just turn it around so that the supply end is towards the back of the printer and the take-up is towards the front.

The print media won't feed and the On-Line LED starts blinking.

Symptoms: Printer starts to make noise like everything is fine, but no print media feeds.

- Be sure the media is properly inserted into the Media Supply Tray and that you have not overloaded the tray. Load no more than about 50 sheets of print media at a time.
- You're trying to feed media that's too thick or too heavy. Always use factory-approved print media designed for use with the Color Sign Printer.
- Before inserting, separate the print media to assure it is not sticking together
- The In-Feed Rollers are extremely dirty. Refer to Section 10-H for cleaning instructions.

My image gets cut off at the bottom (or on the right-hand side in Landscape mode).

- Remember, there is an unprintable area at the bottom of all media. Refer to Section 4-I for the maximum printable area of each print media size, or reduce the image size from within the software program you're using.
- Check that the correct Paper Size option is selected in the printer driver. Improper paper size settings will always send your image to the wrong area of the page (see Section 4-I for important print media information).

My prints have thin lines or a dark band across the width of the print.

Symptoms: The printer seems to “stutter” or print unusually slow and when the print is finished, it has a dark strip across the first inch of the print while the rest of the print is much lighter. Or, there are many thin lines across the width of the print.

- **Windows:** Print using the Color Sign Printer’s Fast 32-Bit Print Spooler for Windows 95. When using this spooler, be sure that your computer’s parallel port mode is set to ECP and that a DMA channel is assigned. See Section 6-C and D for instructions on using this spooler.
- **Windows:** This signifies that your computer is not sending data to the printer fast enough. Select the **Write Direct to Port** option in the Color Sign Printer’s printer driver setup if you are unable to use the 32-Bit Print Spooler. Selecting this option will bypass the system print spooler and devote all of your system resources to the current print job. This option will increase the rate of data transmission but will tie-up your system until the print job is complete.
- **Windows:** See “I’m having problems printing from Windows 95” on page 73.
- **Windows:** If using the print manager of Windows 3.1x or the standard print spooler of Windows 95, and your printer starts printing and stops, you may need to increase your Transmission Retry Value from 45 to 900. To do this in Windows 3.1x, go to **Control Panel**, click on the **Printers** icon, and select the **Connect** button. To do this in Windows 95, click the **Start** button, point to **Settings**, and select **Printers**. When the Printers window appears, click on the Color Sign Printer icon with the *right* mouse button and select the **Properties** option. Then, click on the **Details** tab.
- **Windows:** Install a high speed Parallel Port Card into your computer. Such a card will improve your parallel port speed by 2-10 times, while still allowing you to use the system print spooler.
- **Macintosh:** You may have the printer connected to a serial port which has been added on to your computer’s main board. Such add-on ports may not be fast enough to sustain the Color Sign Printer’s high-speed rate of data transmission. When this happens the printer will seem to “stutter” as it waits for more data to be sent down from your computer. To solve this problem, connect the Color Sign Printer to one of your computer’s built-in ports such as the

Printer or Modem port. Be sure the port to which you connect the Color Sign Printer is Geo-compatible.

- **Mac and Windows:** This condition can also occur if using a substandard interface cable. To solve this problem, connect the printer to your computer using a shielded, bi-directional interface cable no longer than 6 feet in length.
- **Mac and Windows:** This symptom could also be caused by interruptions in the printer driver. You should not have your screen saver or energy saver mode enabled, nor should you run another program while printing. Such action will interrupt the printer driver and will slightly affect print speed and quality.

Two sheets of print media feed at the same time.

- Be sure to “fan” the media before loading. Static tends to attract two sheets together. This is especially true with transparency film or #300-Series cast vinyl or polyester.

My prints are “scrambled” or look like bar codes.

- This signifies a data transmission error. This could be caused by a faulty or substandard printer cable or port. Try switching to a different, higher quality cable. For best results, use a shielded, bi-directional cable no longer than 6 feet in length.
- If using a switch box, connect your printer directly to your computer.

The ribbon sensor needs adjustment.

Symptoms: The Color Sign Printer is not printing each ribbon panel in the proper Yellow-Magenta-Cyan-Black/Overlay panel order, and, as a result, my full-color output is printing completely off-color on all or part of the sheet.

- Check that the Ribbon Type option in the printer driver is set according to the ribbon currently installed (see Section 4-B and Section 6-E or 7-D). Also make sure that you are not using a B/A3-Super size ribbon with the smaller A/A4-Super size print media. If you have the print supplies configured properly, and the error persists, your printer’s ribbon sensor is most likely in need of adjustment. Refer to the following steps to adjust the ribbon sensor.

- 1.** Open the Top Cover, and manually wind the ribbon forward until the beginning of the ribbon’s magenta (red) panel touches the ribbon take-up core (the core with the used ribbon on

it). This will properly place the panel over the ribbon sensor.

2. Remove the Side Cover on the right-hand side of the printer by loosening the two screws located on the inside top of this cover and lifting the cover straight up (see illustration on page 81).

3. Close the Top Cover and verify that the printer is properly connected to your computer.

Continue here if printing from Windows...

4. Go to a DOS prompt and type the following command:

C:\MODE LPT1,,P <press Enter>

5. Insert the printer driver diskette into your computer's disk drive.

6. From the DOS prompt, type one of the following commands according to the type of ribbon you have installed in the printer. Typing such a command will send the sensor calibration data to your printer.

For the Resin Thermal or Wax Thermal ribbons, type:

C:\COPY A:WAX4.FZP/B LPT1
<press Enter>

For the A/A4-Super Dye Sub ribbon, type:

C:\COPY A:DYE8-5.FZP/B LPT1
<press Enter>

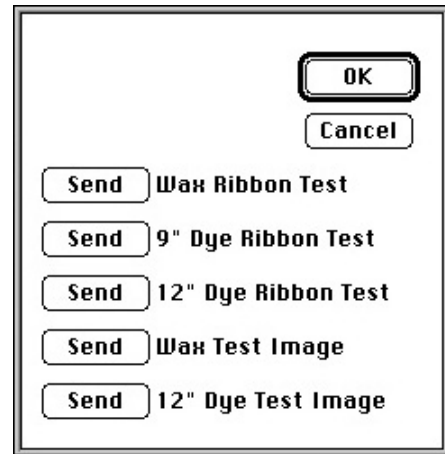
For the B/A3-Super Dye Sub ribbon, type:

C:\COPY A:DYE12.FZP/B LPT1
<press Enter>

Continue here if printing from Macintosh...

4. Go into the Chooser and select the Color Sign Printer driver and the port to which the printer is attached (Printer Port, Modem Port, Hurdler).

5. Go to printer driver setup window (see Section 7-D) by selecting Page Setup from the File menu. Click on the **Expert** button and then on the **Cal...** button of the Expert Options dialog box. The printer's ribbon sensor calibration window appears (see also Section 7-D for more information on the ribbon sensor calibration window).



6. Click on the appropriate **Send** button to download the proper ribbon sensor calibration sequence for the ribbon you currently have installed in your printer.

Select **SEND Wax Ribbon Test** to adjust the ribbon sensor if you have a resin thermal or wax thermal transfer ribbon installed.

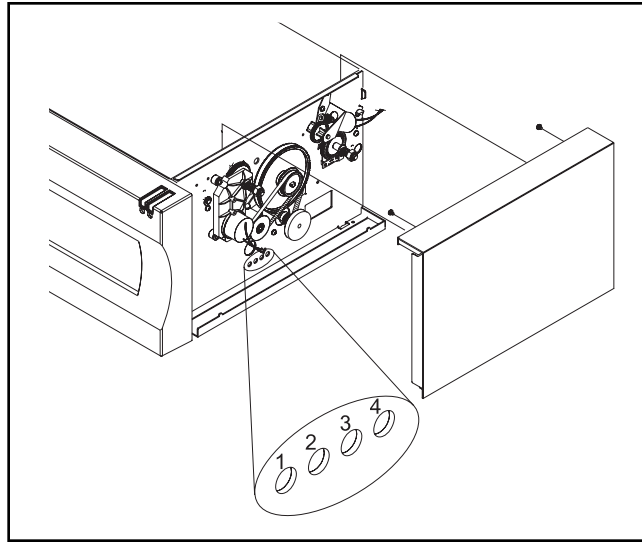
Select **SEND 9" Dye Ribbon Test** to adjust the ribbon sensor if you have the A/A4-Super (9" x 14") dye-sublimation ribbon installed.

Select **SEND 12" Dye Ribbon Test** to adjust the ribbon sensor if you have the B/A3-Super (12" x 20") dye-sublimation ribbon installed.

7. After the data is sent, you will hear the printer cycle the printhead. Then, the printer's cancel LED light or on-line LED light will flash. This indicates that the ribbon sensor is in need of adjustment.

8. To adjust the ribbon sensor, locate the four small holes toward the bottom of the printer's metal chassis. Each of these holes has a specific function. Hole #1 adjusts the overall lightness/darkness of the printed page and should **NOT** be adjusted. Hole #2 recalibrates the ribbon sensor for the resin thermal and wax thermal ribbons. Hole #3 recalibrates the ribbon sensor for the A/A4-Super size (9" x 14") dye-

sublimation ribbon. Hole #4 recalibrates the ribbon sensor for the B/ A3-Super size (12" x 20") dye-sublimation ribbon.



9. Using a small flat-head screw driver, *gently* rotate the screw in the appropriate hole. Do not push on the screw since this may damage it. Rotate the screw just a fraction of a turn either clockwise or counter clockwise until both of the printer LED lights stop flashing. When both LED lights remain solid, the ribbon sensor calibration is complete. Reassemble the printer and try your print job again.

B. Troubleshooting for the Color Sign Printer's Macintosh Printer Driver and Backgrounder Software

If you are having difficulty using the Color Sign Printer's Macintosh QuickDraw driver, run through the following check list.

An error dialog box appears when you try to print saying the printer is not ready.

- Is the printer plugged into the wall outlet? Are the LED lights on? Is the printer selected in the Chooser? Is the printer connected to your Macintosh? Is the connection solid? Does the printer have proper print media and ribbon installed?

The printer driver indicates that it is printing, but there is no response from Color Sign Printer.

- If printing to the Backgrounder, be sure it is running and that it is available for processing.
- As a last resort, save what you are working on, close all applications, and do a system restart. This clears the memory of the Macintosh. If you are using the Backgrounder, be sure it is opened before you open any other application. Now, try your print job again.

The driver displays an error message saying there is insufficient memory from which to print.

- Close all Desk Accessories and document windows, other than the one from which you wish to print. Turn off any options in the application that consume memory, such as "Use available memory for speed." Save what you are working on, quit from the application, and restart to clean up the memory of the Macintosh.
- Use the Backgrounder for processing a batch print (see Section 8-G). As a last resort you should remove any INIT and CDEV files in your System Folder that you don't need.

The driver displays an error message saying there is not enough room on the disk.

When the driver is printing, it stores the pages to be printed from the document in a temporary file. This file is in the System Folder and is called the "Spool File" (some applications may re-name the file or put it in a different folder). In some cases, the spool file can become very large, particularly if the images are complex, such as scanned photographs. The following points help reduce the risk of running low on disk space:

- Always start up from the hard disk. The driver creates the spool file on the current startup disk. A floppy disk will not have sufficient space on it.

The foreground application is less responsive while printing in the background.

- The driver puts all the pages to be printed into a single spool file. If you have only a little space left on the hard disk, you can print each page from the document individually, using the From and To fields in the Print dialog box.
- Clear off more hard disk space and try your print job again.
- Background printing shares the processor in the Macintosh with the foreground application. The amount of time allocated to processing the job may be adjusted with the Preferences command in the Admin menu of the Backgrounder. Some types of images (such as very large files) can make the Macintosh less responsive.

Text is “jagged,” particularly at very large sizes.

- Install Adobe Type Manager, or use a System 7 TrueType font.
- If you are using Adobe Type Manager, try increasing the font cache to more than 256K (use the Control Panel). Try closing other documents, and increasing the available memory for the application before printing again.
- If printing with dye-sublimation supplies, select the **Text anti-aliasing** option in the Expert options of the Page Setup dialog box.

Dye-Sublimation Text is “jagged,” especially at small sizes.

- Select the **Enhance Fine Text** option in the Expert options of the Page Setup dialog box.
- Select the **Text anti-aliasing** option in the Expert options of the Page Setup dialog box.

Text is incorrectly formatted.

- Some applications have an option to enable or disable “fractional character spacing”. It is often found in a Preferences dialog box or as part of the page setup dialog box. It should always be selected to ensure that the driver can position text accurately.

Prints are coming out black and white only, or images are garbled or won't print at all.

- Try disabling unnecessary extensions (i.e. those which are not completely necessary to run your system or your Color Sign Printer). To disable extensions, remove them from the Extensions folder and restart. To isolate the extension causing the problem, try removing suspect extensions one-half at a time while printing to the Color Sign Printer.

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Technical Specifications

Print Methods	Dye-Sublimation/Resin Thermal Transfer/Wax Thermal Transfer
Resolution	300 x 300 DPI
Colors	Up to 16.7 million
Print Speed	
Dye-Sublimation Process Color:	Approximately 12 minutes per 20" page (C,M,Y,K)
Resin Process Color:	Approximately 6 minutes per 20" page (C,M,Y)
Wax Process Color:	Approximately 4 minutes per 20" page (C,M,Y,K)
Resin Spot-Color:	Approximately 2 minutes per 20" page
Interfaces	Dual Interface: Centronics-type parallel, high-speed serial (Geo-compatible serial port required for Macintosh)
Printer Drivers	Windows 3.1 GDI, Macintosh Color QuickDraw™ (PowerPC native) Optional CPSI-based Adobe PostScript Level 2 (Windows PostScript supports wax thermal and dye-sublimation print methods only)
Ribbons	
Dye-Sublimation:	3-color FotoShield (C,M,Y,O), 4-color (C,M,Y,K)
Resin Thermal:	3-color (C,M,Y), spot-color ribbon colors include Cyan, Magenta, Yellow, Black, Red, Blue, White, Orange, and Green. Metallic Gold, Silver, and other selected Pantone spot-colors also available.
Wax Thermal:	4-color (C,M,Y,K), 1-color (K)
Print Media Types	
Dye-Sublimation:	Dye-sublimation receiver sheets
Resin Thermal:	#300-Series Vinyl and Polyester: 2 Mil Premium Clear Cast Vinyl 2 Mil Premium White Cast Vinyl 4 Mil Premium White Calendered Vinyl Brushed Gold Polyester Brushed Silver Polyester
Wax Thermal:	Plain paper, transparency film, T-shirt transfer paper
Print Media Size	
Dye-Sublimation:	B / A3 Super-size (12" x 20" / 305 x 508mm), A / A4 Super-size (9" x 14" / 229 x 356mm)
Resin Thermal:	B / A3 Super-size (12" x 20" / 305 x 508mm), Extended B / A3 Super-size (12" x 26" / 305 x 660mm)
Wax Thermal:	B / A3 Super-size (12" x 20" / 305 x 508mm), A / A4 Super-size (9" x 14" / 229 x 356mm)

Printable Area

<u>Media Size</u>	<u>Color Print Area</u>	<u>Mono Print Area</u>
A / A4 Super	8.8" x 11.3" (224 x 287mm)	8.8" x 11.3" (224 x 287mm)
B / A3 Super	11.95" x 17.4" (304 x 442mm)	11.95" x 17.4" (304 x 442mm)
Extended B / A3 Super	11.95" x 22" (304 x 559mm)	11.95" x 24" (304 x 610mm)

Dimensions 17.1"W x 8.25"H x 14.75"D
(26.5" D with Media Tray installed);
43.5cmW x 21cmH x 37.5cmD
(67.3cmD with Media Tray installed)

Weight 42 lbs. (19kg)

Temperature

Operating: 5°C to 35°C
Storage: -20°C to 55°C
(5°C to 35°C guaranteed for Ink Ribbon; -5°C to 45°C
for up to one month is normally acceptable but not
guaranteed)

Humidity

Operating: 20% to 80% (RH non-condensation)
Storage: 15% to 85% (RH non-condensation)

Power 110/120 VAC, 50/60 Hz, or 220/240, 220-250 VAC,
50/60 Hz, or 100 VAC, 50/60 Hz

Safety USA — UL1950
Canada — CSA C2.2
Europe — TÜV-GS (IEC-950)

EMI USA — FCC Class A
Canada — CRC c1374, Class A
Europe — CISPR 22-B and EN55022, Class B; TÜV-EMC

CE Self certified based on IEC 801-2,-3,-4, CISPR 22-B and
IEC-950 certification

Warranty One Year, Parts and Labor

Appendix

A

Interfacing Information

A. Introduction

The Color Sign Printer is equipped with both a standard 8-bit Centronics-type parallel interface port and a high-speed serial interface port. These communication ports are the means through which the printer receives data from your computer. This section describes the pin assignments and signal specifications for each of these ports.

B. Centronics-type Parallel Interface

The Centronics-type parallel interface is the most widely used printer interface due to its simplicity, speed and standardization throughout the computer industry. The printer's parallel interface connector is a standard 36-pin Amp type with two metal-wire retaining clips. It mates with a standard computer to printer parallel cable. For best results, always use a shielded parallel cable (preferably an I-EEE 1284 type cable) which is less than 6 feet in length.

Pin assignments are as follows:

WIRE DIAGRAM	
DB36P	DB25P
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
32	15
31	16
36	17
19 THROUGH 30	19 THROUGH 25
SHELL	SHELL

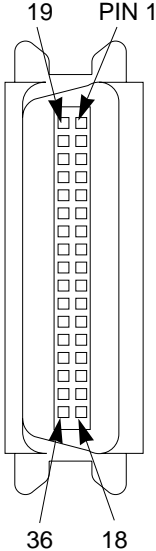
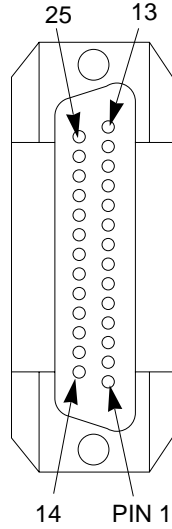
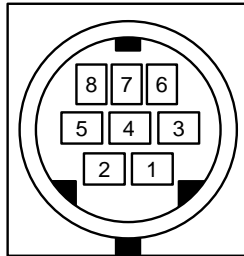



TABLE A-1: Parallel Interface Pin Assignments

C. Mini 8-Pin Serial Interface

The mini 8-pin serial interface connector is the standard interface used by Macintosh. Due to the Color Sign Printer's high-speed rate of data transmission, its serial interface port communicates only with Macintosh GeoPorts. If your Macintosh does not have a Geo-compatible serial port, you will not be able to use the Color Sign Printer's serial port. The Color Sign Printer's serial port mates with a standard computer to printer serial cable. Always use a high-quality serial cable which is less than 6 feet in length.

Pin assignments are as follows:



Pin Number	Signal Name	Signal Description
1	HSKo	External Clock Output $\pm 2V < V_{out} < \pm 3.6V$; $R_{out} < 450\Omega$
2	HSKi	Not Connected
3	TxD-	Not Connected
4	GND	Signal ground. Connected to logic and chassis ground.
5	RxD-	Receive data (inverted); $V_{ih} = 0.2V$; $V_{il} = -0.2V$; $R_{in} > 12K\Omega$
6	TxD+	Not Connected
7	GPi	Not Connected
8	RxD+	Receive data. Received uninverted at SCC's RxD. $V_{ih} = 0.2V$; $V_{il} = -0.2V$; $R_{in} > 12K\Omega$

TABLE A-2: Serial Interface Pin Assignments

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