

DisplayMaker Legacy 72SI, 98SI

User Guide

Part Number 0700048



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Printed in the US

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www.hp.com/go/graphicarts

Revision Log

The following is a list of major changes and additions that have been made to this manual since it was first released.

See the accompanying *Release Notes* for specific changes to the software and hardware between manual updates.

Revision	Description
Revision B	<p>Chapter 2: Updated Ready screen image. Menu items added: Clean Grit Rollers, Capping Purge, Printer Name, Localization, Print Menu Tree. Menu tree updated.</p> <p>Chapter 3: Added Fine Text mode. Added Media Feed Number prompts to the end of the roll-fed media load process. Added media alignment bar to the rigid media load process. Set Sort Method added to the Media Wizard.</p> <p>Chapter 4: Fig. 4-5 showing AutoSet Summary updated with new “All Jets Replaced” row headings.</p> <p>Chapter 5: Added cleaning procedure for the post-heater cover. Added note about Prep for Storage/Shipping requirements.</p> <p>Appendix A: Specifications for DisplayMaker 98SI added. Maximum media thickness corrected.</p>

Regulatory Statements

FCC-A 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

This equipment must be installed exactly as instructed in this manual using only the components supplied. If a supplied component ever needs to be replaced, it must be replaced with the same part supplied by the manufacturer. It is your responsibility to follow these instructions in order to maintain compliance with the FCC regulations. Changes or modifications not expressly approved by ColorSpan Corporation could void your authority to operate this equipment. In particular, this device must be operated with shielded cables to maintain FCC compliance.

A booklet is available from the Federal Communications Commission entitled, *How to Identify and Resolve Radio-TV Interference Problems* (#004-000-00345-4). Write to the U.S. Government Printing Office, Washington, DC 20402.

DOC (Canada) This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Normes de Sécurité (Canada)

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le règlement sur le brouillage radioélectrique édictés par le Ministère des Communications du Canada.

Telecommunications Network Statement



The ColorSpan VideoNet port on this device is not intended to be connected to a public telecommunications network. Connection of this device to a public telecommunications network in a European Community Member State will be in violation of national law implementing Directive 91/263/EEC on the approximation of laws of the Member States concerning telecommunication terminal equipment, including the mutual recognition of their conformity.

Der VideoNet port ist nicht dafür vorgesehen an ein öffentliches Telefonnetz angeschlossen zu werden. Der Anschluß dieses Gerätes an ein öffentliches Telefonnetz in einem Mitgliedstaat der EU, verstößt gegen nationale Gesetze zur Ausführung der Direktive 91/263/EEC, die sich mit der Annäherung von Gesetzen von Mitgliedstaaten beschäftigt, betreffend Telekommunikationsanlagen und die gegenseitige Anerkennung ihrer Konformität.

About This Manual

This manual contains the following topics:

- ◆ **Chapter 1, Getting Started**, shows you how to unpack and assemble the printer, and introduces you to its main features.
- ◆ **Chapter 2, Using the Control Panel**, shows you how to use the control panel to specify printer options.
- ◆ **Chapter 3, Ink and Media**, shows you how to install ink and media.
- ◆ **Chapter 4, Calibrating the Printer**, shows you how to calibrate the printer for optimal print quality.
- ◆ **Chapter 5, Maintaining the Printer**, explains scheduled maintenance, how to recover clogged printheads, how to prepare the printer for extended power-down (such as for shipping or storage), and more.
- ◆ **Appendix A, Technical Specifications**, lists the printer's technical specifications.
- ◆ **Appendix B, Troubleshooting**, shows you how to troubleshoot common printing problems and interpret Action and Warning messages.

For further information, refer to the following ColorSpan documentation:

- ◆ *Site Preparation Guide* — explains how to prepare your site for the printer's arrival and installation.
- ◆ *Release Notes* — late-breaking information, update descriptions, and update instructions.
- ◆ ColorSpan Print Server Documentation — the *System Control User Guide*, *Print Server & Driver Setup Guide*, and *Printing Tools User Guides* shows you how to print and RIP files through the ColorSpan print server. If the printer is connected to a non-ColorSpan print server (RIP), refer to the documentation that accompanies the server.
- ◆ ColorSpan web site — <http://www.colorsan.com>.

Conventions

This manual uses the following informational conventions:



Note A special technique or information that may help you perform a task or understand a process.

Hinweis Ein Hinweis beschreibt eine spezielle Technik zur Lösung einer Aufgabe oder enthält Informationen, die Ihnen eine Prozedur näher erläutert.



Caution Alerts you to something that has the potential to cause damage to hardware, software, or data.

Vorsicht Dieses Feld weist auf einen Umstand hin, der einen Hardware-oder Software-Schaden oder Datenverlust verursachen könnte.



WARNING Alerts you to something that has the potential to cause physical harm to you or others around you.

WARNUNG Eine Warnung auf weist auf einen Umstand hin, durch den Ihnen und anderen Personen ein physischer Schaden erwachsen könnte.

Other WARNING symbols used:



Electrical Hazard

Vorsicht steht unter Spannung



Lifting Hazard

Vorsicht beim Anheben



Hot Surface

Heiß, nicht berühren



Moving Parts

Bewegliche Teile, Verletzungsgefahr.

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CHAPTER 1

Getting Started

This chapter shows you how to get started using your printer. It includes these topics:

- ◆ Operating Requirements (page 1-2)
- ◆ Unpacking and Assembly (page 1-7)
- ◆ Workflow Overview (page 1-8)
- ◆ Parts Overview (page 1-10)
- ◆ Special Features (page 1-15)

Operating Requirements

Choose a location for the printer before you unpack it. Keep the following requirements in mind:

Electrical

- ◆ Use the supplied power cord. Plug it directly into a grounded electrical outlet. Do not lengthen the power cord with an extension cord; the resulting voltage drop could damage the printer.
- ◆ Make sure the line voltage meets the requirements: 220 VAC \pm 10%, single phase, 20 Amps, with NEMA L6-20R locking wall receptacle (North America and Japan), or 16 Amps with IEC 60309 wall receptacle (Europe). Install a voltage regulator or similar device if the power source is not stable within these specifications. **See Appendix A, Technical Specifications, for details.**
- ◆ To maintain vacuum to the printheads during printer power-down, use the auxiliary 24 volt power supply (included in the accessory kit with universal power adapters). Connect the 24 VDC jack on the vacuum/pressure assembly to either of two options:
 - ◆ **1. UPS** – customer-supplied uninterruptible power supply, output 100-240 VAC, 50/60 Hz, minimum of 15 watts of power, provides battery backup to the vacuum system in the event of a power failure.
 - ◆ **2. Wall outlet** – 100-240 VAC, 50/60 Hz, provides temporary power to the vacuum system when it is necessary to power down the printer for service. See Appendix A, Technical Specifications, for details.
- ◆ Connect the print server or RIP to a separate electrical circuit from the printer.

Environmental

- ◆ Make sure the room is well ventilated, with a temperature and relative humidity within specifications (see “Specifications” on page A-2). Optimal printing and drying occurs within these ranges. The newly-received printer, ink, and media should be allowed to stabilize for several hours in its operating environment prior to unpacking, installation, and assembly, especially during seasons of hot or cold weather. Failure to do so could result in printing problems.
- ◆ The printer uses solvent-based inks. The printer does not include an integrated exhaust hood or shielding for collecting the volatile organic compound (VOC) emissions from the inks and cleaning solvent. The owner is responsible for ventilation and VOC recovery as required by local regulations.

Connection kits are available from MacDermid ColorSpan to vent VOC emissions to the customer's exhaust system or VOC recovery equipment. Consult your MacDermid ColorSpan reseller for details.

- ◆ Store media and ink in an area with similar temperature and humidity conditions as the printer.
- ◆ Locate the printer close enough to the print server (RIP) so that they can be connected with the required cable.
- ◆ Locate the printer on a flat, level floor.
- ◆ Locate the printer where its normal operating noise will not disturb quiet work areas.
- ◆ DO NOT install the printer near humidifiers, refrigerators, fans, water faucets, heaters or similar equipment.
- ◆ DO NOT install the printer in areas where the temperature changes abruptly, such as near air conditioners or in the path of direct sunlight.
- ◆ DO NOT expose the printer to flames or dust.

Important Operating Notes

- ◆ **DO NOT POWER DOWN THE PRINTER.** Constant vacuum at the printheads is required to prevent ink from flowing from the printheads when not printing, even when the printheads are capped. If the printer must be powered down for shipping, empty and cap the printheads (See "Extended Power Down and Restart" on page 5-21) or apply auxiliary 24 volt power.
- ◆ If the printer has been idle for more than several minutes, press the Prime Bars button on the printer control panel to check for missing inkjets. To recover missing inkjets, see "Checking Jet Health" on page 3-7.
- ◆ If the printer will be idle for more than one hour, cap the printheads to conserve ink. When the printheads are uncapped and the printer is not printing, the printheads periodically expel a small amount of ink into the excess ink reservoir to keep them working. ("Capping the Printheads" on page 3-13 for instructions.)
- ◆ To wipe the printheads, use only ColorSpan cleaning solvent applied with a 100% polyester Class 100 cleanroom wipe. (See "Cleaning Clogged Ink Jets" on page 5-9 for instructions.) DO NOT USE ISOPROPYL ALCOHOL.

- ◆ To cap the printheads, use only SolaChrome Printhead Capping Film. Damage to printheads resulting from the use of poorly performing plastic films is not covered by the printer warranty.
- ◆ The maximum diameter allowed on the takeup spool is 7.5 inches (190.5 mm) on a 3-inch core. When the takeup spool has a diameter of 6.5-7.5 inches (165.0-190.5 mm), the control panel displays a warning about possible print quality issues.
- ◆ The media supply may be wound either printed-side-out or printed-side-in, but the takeup, if used, must be loaded printed-side-in.
- ◆ The printer includes three gauges: a “minimum” gauge (0.085 inches above the media), a “maximum” gauge (0.115 inches above the media), and a camera height gauge. Setting the height above the maximum may result in excessive overspray. Setting the height below the minimum may result in the carriage striking the media. See “Set the Printhead and Camera Height” on page 5-12 for instructions.
- ◆ The Media Wizard stores a set of operational parameters for predefined and user-defined media types. When you load a new media type, select an existing Media Wizard set, or create a custom set. Media Wizard parameter sets can be selected at any time from the control panel. (See “Media Wizard” on page 3-44 for details.)
- ◆ After calibrating the media feed (advance), record the Media Feed Number (MFN) from the control panel in a notebook. The next time you load the same media, you can recall the media feed settings by entering the MFN, instead of performing the calibration again.
- ◆ Enable AutoTune during long periods of unattended printing. AutoTune runs Autojet at user-defined intervals to ensure that all jets are either working or substituted with working jets. (See “AutoTune” on page 4-4 for instructions.)
- ◆ Wear cotton gloves when loading media to prevent fingerprints that could show after printing.
- ◆ **DO NOT** rest or store a media roll on end, or you could cause edge creases that could strike the printheads during printing.
- ◆ **DO NOT** clean the printhead surfaces with a dry cloth or paper towel.
- ◆ **DO NOT** reprint over any output that has not completely dried. The rubber pinch rollers could be damaged by wet

ink. If ink does get onto the pinch rollers, clean them with SolaChrome-HR Cleaning Solvent and dry them thoroughly before printing.

- ◆ **DO NOT** set heavy objects on the power cord or printer cable; do not bend the cables or force them into contorted positions.
- ◆ **DO NOT** place heavy objects anywhere on the printer.
- ◆ **DO NOT** lean on or place objects on the optional auxiliary dryer, if installed.

Safety Warnings



WARNING WITH THE POWER SWITCH IN THE OFF POSITION, POWER MAY STILL BE SUPPLIED TO THE PRINTER COMPONENTS. To completely cut power from the printer, you must unplug the power cords from the power outlets.

WARNUNG WENN DER NETZSCHALTER IN OFF POSITION STEHT, WIRD DEN KOMPONENTEN TROTZDEM STROM ZUGEFÜHRT. Um den Drucker komplett stromfrei zu machen, müssen Sie den Netzstecker ziehen.



WARNING The printer is too heavy to be lifted safely by one person. At least five persons are required to lift the printer.

WARNUNG Der Drucker ist zu schwer für eine Person. Mindestens 5 Personen sind erforderlich um den Drucker anzuheben.



WARNING THE PRINTER ELECTRONICS ASSEMBLY CONTAINS A LITHIUM BATTERY DEVICE. THERE IS A DANGER OF EXPLOSION IF THE BATTERY IS INCORRECTLY REPLACED. The battery must be replaced only by ColorSpan authorized personnel, and must be replaced only with the same or equivalent type. Dispose of this lithium battery device in accordance with local, state (or province), and Federal (or country) solid waste requirements.

WARNUNG DIE ELEKTRONIK DES DRUCKERS ENTHÄLT EINE LITHIUM BATTERIE. ES BESTEHT EXPLOSIONSGEFAHR WENN DIESE UNSACHGEMÄSS AUSGEWECHSELT WIRD. Die Batterie darf nur durch einen ColorSpan autorisierten Techniker ausgetauscht werden und muss mit dem gleichen oder einem gleichwertigen Typ Batterie ersetzt werden. Bitte entsorgen Sie die Lithium Batterie gemäss Ihren Landes- oder Bundesgesetzen.



WARNING Hot surfaces. Do not touch.

WARNUNG Heiß, nicht berühren.



WARNING Moving parts. Keep fingers away from media path.

WARNUNG Bewegliche Teile, Verletzungsgefahr.

Unpacking and Assembly

This printer must be unpacked and installed only by a MacDermid ColorSpan Authorized Service Provider (ASP). If you need to relocate, ship, or store an installed printer, contact your reseller or MacDermid ColorSpan Technical Services for assistance.



Caution To avoid damaging the carriage bearings when moving the printer, move the carriage away from the rail by reinstalling the shipping blocks. This is recommended even if moving the printer down the hall or between rooms. To ship or relocate the printer a longer distance, contact MacDermid ColorSpan Technical Services for instructions.

Workflow Overview

Power Up the Printer

1. Turn on the power switch to observe the typical power-up sequence.
2. The control panel backlight illuminates. Move the contrast lever (located to the right of the control panel screen) up and down until the control panel graphics and messages are easily visible.
3. The printer runs a series of self-tests, and reports any errors it finds.
4. The printhead carriage moves to the service station.
5. The control panel prompts you to load media.
6. You may load media or skip loading media for now. See “Loading Roll-Fed Media” on page 3-16 for instructions.
7. The control panel displays the status screen.

Daily Startup

1. Uncap the printheads (for instructions, see “Uncap the Printheads” on page 3-14).

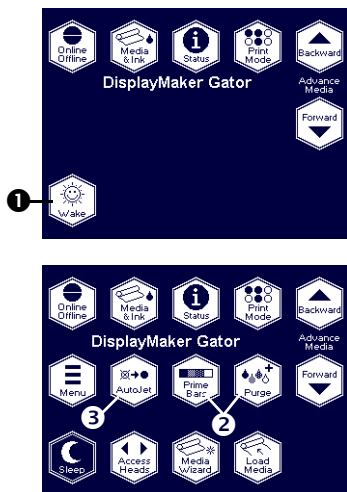
This procedure includes, while the carriage is still at the capping station, wiping the printheads with SolaChrome-HR Cleaning Solvent, using a 100% polyester Class 100 clean-room wipe. **DO NOT USE ISOPROPYL ALCOHOL ON THE PRINTHEADS.**

2. Ensure the functioning or substitution of all inkjets (for instructions, see “Checking Jet Health” on page 3-7):

- ◆ Print Prime Bars
- ◆ Run Purge-n-Wipe
- ◆ Repeat once or twice to recover missing inkjets

3. Map out missing jets (see “AutoJet” on page 4-3 or “Manual Jet Mapping” on page 4-13).

Under normal circumstances, these procedures should adequately prepare the printer to print. For instructions on recovering stubbornly clogged printheads, see “Cleaning Clogged Ink Jets” on page 5-9.



Printing

When the printer is connected to a ColorMark Pro print server, here is how a typical print job progresses from the client workstation to the printer. If you are using a non-ColorSpan RIP, refer to the documentation that accompanies it for details.

1. The operator sends a file to be printed from a client workstation.
2. The print job is received by the print server.

Once it reaches the print server, the print job may be reprioritized, combined with other jobs, re-routed, or otherwise manipulated. Refer to the print server online help or manual for instructions.

3. The print server RIPs the job.

The raster image processing (RIP) process translates the PostScript language data that comprises the print job into the data required by the printer.

4. The server sends the image to the printer for printing.

Printing can be paused and resumed at the control panel, enabling you to purge the printheads to recover jets or make other adjustments. During the pause, the carriage goes to the service station and idle spits.

600x300 Printing

The default printing resolution is 600x600 dpi. To print a document at 600x300 dpi, configure the third-party RIP or ColorSpan print server to rasterize print jobs at this resolution. Refer to the *Print Server & Driver Setup Guide* or third-party RIP documentation for instructions.

Daily Shutdown

1. Cap the printheads (for instructions, see “Capping the Printheads” on page 3-13).
2. **DO NOT POWER DOWN THE PRINTER.**

If the printheads will be capped longer than overnight, follow the instructions under “Daily Startup” twice a week to prevent excessive ink clogging, then recap the printheads. If this is not possible or impractical, or if the printer must be shipped, see “Extended Power Down and Restart” on page 5-21 for instructions.

For further idle maintenance tips, see “Idle Jet Maintenance” on page 3-3.

Parts Overview

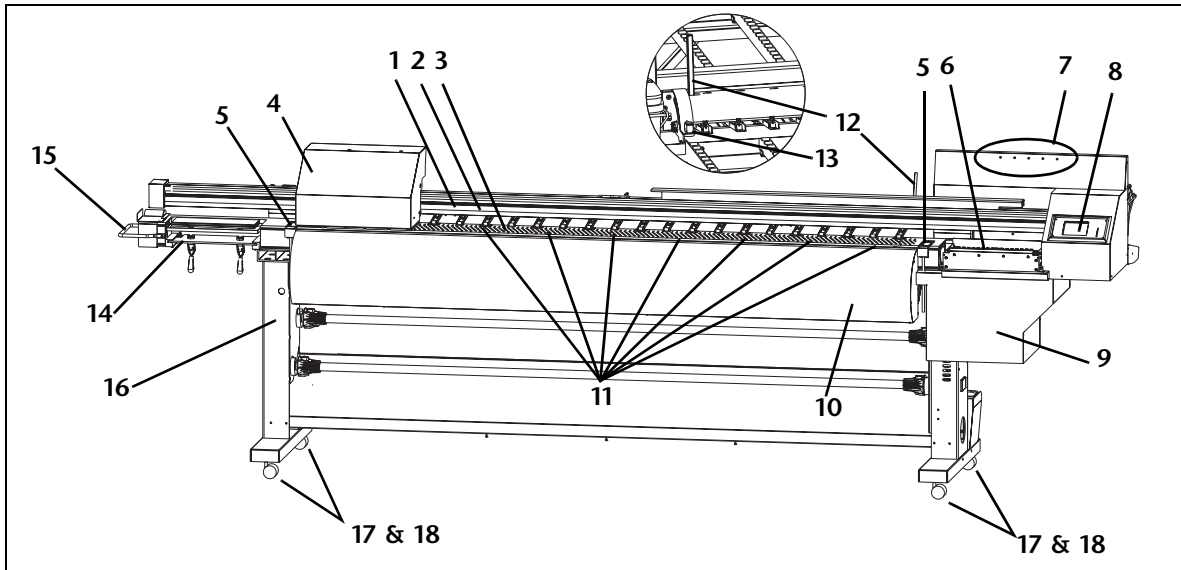


Fig. 1-1. Front view

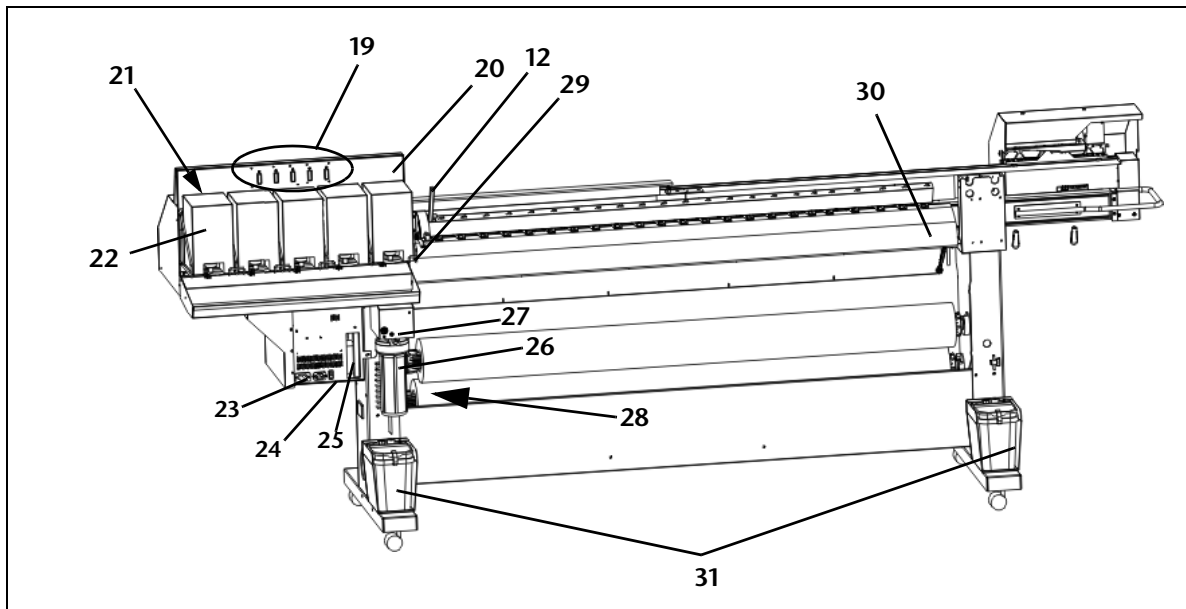


Fig. 1-2. Rear view

Index Description

- 1 **Encoder strip** — allows precise positioning of the print-head carriage across the length of the platen.
 - 2 **Main carriage drive belt** — moves the carriage across the length of the platen.
Transport chain (not shown) — supports the ink supply tubes that carry ink from the ink supplies to the printheads, power, and electrical signal cables.
 - 3 **Platen** — supports the media under the printheads during printing, warms the media in the print zone, includes vacuum to hold the media against the platen.
 - 4 **Printhead carriage** — carries the printheads, digital imaging sensor, and photodiode across the length of the platen.
Digital image sensor (on carriage, not shown) — detects the location of printed pixels for precise alignment of the printheads, enables the automatic replacement of poorly-printing ink jets with substitute jets.
Photodiode (on carriage, not shown) — enables the creation of color transforms without an external spectrophotometer (requires print server support), and the linearization of existing transforms.
 - 5 **Spittoons** — located at both ends of the platen, receives ink “spits” that keep the printheads at their optimal performance.
 - 6 **AutoClean™ Service station** — catches purged ink from the printheads, wipes the printheads with cleaning solvent. Wipers are automatically cleaned and cleaning solvent applied before wiping. Ink is periodically spit when idle to keep the inkjets working.
 - 7 **Ready-for-Refill LEDs** — an LED illuminates when its corresponding profiler indicates that the ink box should be replaced with a full one.
 - 8 **Control panel** — displays messages and allows control of certain printer operations. Includes a contrast adjustment lever and audio feedback.
 - 9 **Electronics module** — contains the printer’s power supply and control electronics.
 - 10 **Postheater** — helps to dry the output prior to the takeup. Incorporates turnbuckles that can be adjusted to straighten the media path.
-

Index Description

- 11 **Pinch rollers** — grip the media during loading and printing.
 - 12 **Pinch roller adjustment lever** — allows you to adjust the force or release the pinch rollers to feed rigid cut-sheet media.
 - 13 **Rigid media sensor** — detects whether rigid media is loaded.
 - 14 **Capping station** — protects the printheads from drying out while idle (not printing) for extended periods.
 - 15 **Handle** — for pulling the printer on its casters and lifting the end of the printer.
 - 16 **Stand** — supports the printer.
 - 17 **Casters (four places)** — enables easy relocation of the printer, can be locked in place.
 - 18 **Leveling pads (four places)** — allows the printer to be stabilized and leveled for consistent media feeding.
 - 19 **Docking station** — holds the profilers, one for each ink box, that track ink and cleaning solvent usage, and identify ink characteristics for the RIP.
 - 20 **Off-Head System (OHS)** — ink boxes, electronics, vacuum (to maintain negative head pressure), and pressure (for purging the printheads) that provide ink and cleaning solvent for cleaning the printheads.
 - 21 **Ink filters** — user replaceable, one for each ink supply; filters out impurities from the ink or cleaning solvent prior to being sent to the printheads.
 - 22 **Ink boxes** — each box holds 3 liters of ink or solvent cleaning solution.
 - 23 **Power connection** — inlet connects the printer to electrical power. Power outlet provides power to the optional auxiliary dryer.
 - 24 **Standby power switch** — places printer in standby mode (to disconnect from power, remove the power cord).
 - 25 **VideoNet port** — connects printer to print server.
 - 26 **Vacuum/Pressure (VP) assembly** — provides vacuum and pressure to the OHS and printheads.
-

Index Description

- 27 **Auxiliary 24 volt power jack to vacuum system** — accepts the supplied 24 volt DC power supply to the vacuum system, which can be connected to a user-supplied UPS for temporary battery backup power in the event of a power failure, or to a wall outlet for temporary power during maintenance that requires the rest of the printer to be powered down. See Appendix A, Technical Specifications, for details.
- 28 **Media supply and takeup system** — drives and provides tension to the media supply and takeup spools.
- 29 **Media advance switch** — enables user to advance media forward or backward during loading.
- 30 **Preheater** — warms the media for optimal printing.
- 31 **Excess ink containers** — collects ink from the spittoons and service station. The stopcock valve on the drain tube enables the removal of the container for ink disposal while preventing ink from draining from the tube.



Caution Open the valve after replacing the container, or waste ink will eventually overflow into the printer.

Auxiliary Dryer

The available auxiliary dryer option is an array of fans mounted on a swivel for use during rigid sheet-fed and roll-fed printing. It provides enhanced drying performance for heavy coverage and high-speed printing. It receives power from a power outlet on the printer's electronics box, and is switched on and off automatically by the printer's software.

Refer to the *Auxiliary Dryer Installation and Operation Instructions* (part number 0700051) for installation and usage instructions.

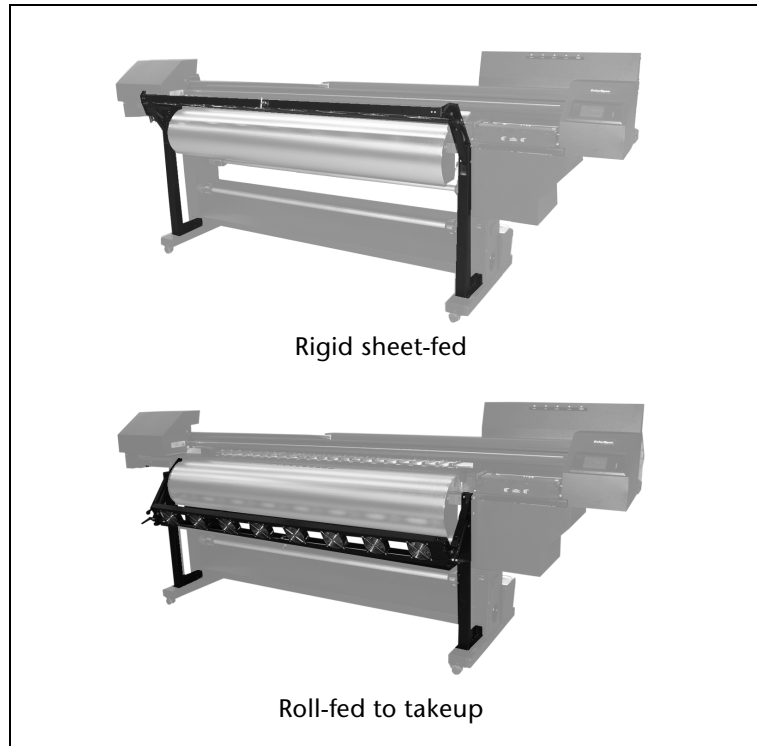


Fig. 1-3. Dryer fan positions

Special Features

The printer has many advanced features to help you produce the best printed output with the least effort.

Printheads

- ◆ **Micro-Quad™ printheads** — sixteen 600 dpi, 25 picoliter piezoelectric printheads (four per color).
- ◆ **AutoClean™ service station** — a motorized service station that wipes the printheads with cleaning solvent automatically to keep all jets firing properly.
- ◆ **Purge-n-Wipe™** — combines an air pressure purge with a cleaning solvent wipe of the printheads to recover clogged jets.
- ◆ **AutoRecover** — performs a Purge-n-Wipe at the start of a print job (before printing) if a Purge-n-Wipe has not been performed for a specified amount of time.
- ◆ **Automated printhead maintenance** — to keep individual inkjets from drying out, the printer periodically “spits” a small amount of ink and performs a Purge-n-Wipe cycle.
- ◆ **Capping station** — manually-operated capping station prevents drying out of printheads when idle. The printer senses the position of the capping pad to prevent carriage movement while capped, or to prevent the carriage from moving to the capping station if the pad is raised.

Ink System

- ◆ **Off-Head System (OHS)** — 3 liter bulk ink boxes with profilers supply the printheads. The printer displays an alert when an ink box should be replaced.
- ◆ **Onboard vacuum/pressure (VP) system** — provides vacuum to maintain negative printhead pressure, and air pressure to purge the printheads or ink tubes without removing them from the printer.

Calibration

- ◆ **AutoSet™ calibration** — uses a high-resolution digital imaging sensor to automatically align printheads bidirectionally for precise positioning of ink jet pixels, and runs AutoJet.
- ◆ **AutoJet™ calibration**— compensates for lost or misfiring jets by locating them and using substitute jets *without* slowing printing speed.
- ◆ **AutoTune™ scheduling** — runs Purge-n-Wipe and/or AutoJet at user-defined intervals, for highest quality during unattended printing. Optionally, if unsubstituted non-working jets are found, printing stops until the problem is corrected.

- ◆ **Automatic color calibration** – uses an onboard photodiode to linearize output over the entire density range (with print server or RIP support).
- ◆ **Color profiling** – with print server or RIP support, the onboard photodiode can be used to create custom ColorMark® and ICC color profiles for third-party media.

Media Handling

- ◆ **Tensioned roll-to-roll media handler** – supply and takeup spools are tensioned to manage vinyl medias on heated surfaces. Tensioning is automatically maintained consistently on the supply and takeup as the roll diameters change during printing. Optionally, the supply or takeup motors can be idled during printing. In roll-fed mode, the supply must be loaded, but the media can optionally be left off the takeup.
- ◆ **Releasable pinch rollers** – ease the loading of roll-fed media and enable the loading of rigid cut-sheet media. The pinch roller force is adjustable to feed the media without marking or damaging it.
- ◆ **Steel media spools** – the takeup supports up to 7.5 inch (190.5 mm) diameter rolls of vinyl media on 3-inch cores. The supply can also accept 2-inch cores with the supplied 2-inch collets. On the 98-inch model, spool supports and a reinforcement sleeve support the weight of longer rolls of media less than 72 inches wide.
- ◆ **Rigid cut-sheet printing** – supports printing on rigid cut-sheet media up to 1/4 inch (6 mm) thick.
- ◆ **Media width sensing** – automatically detects the width and position of the media loaded, for precise image placement.
- ◆ **AutoEdge** – automatically aids the loading of rigid sheets by detecting right, left and leading edges, and warns the user if the sheet is skewed.
- ◆ **Integrated contact heaters** – preheater and platen heater maintain uniform surface temperature across the printing area to control dot gain on various media. Heated drying surface allows prints to dry before being rolled onto the take-up spool (results may vary based on media and color profile characteristics).
- ◆ **Optional auxiliary dryer** – the available auxiliary dryer provides extra drying power to both roll-fed and sheet-fed output.

Performance and Ease-of-Use

- ◆ **Media Wizard** — stores and recalls a set of operating parameters by media type and print mode, for optimal printing performance. Includes a set of predefined settings for standard media; user may add settings for other media.
- ◆ **Speed/quality print modes** — multiple print modes and resolutions provided to meet job and customer requirements for speed and quality.
- ◆ **Simplified control panel interface** — Front Page screen presents frequently-used functions, with recommended preset configurations. A menu provides access to less-frequently used functions and troubleshooting help.
- ◆ **User assistance** — control panel features online help, interactive procedures, and diagnostics to assist the user “on-the-fly,” reducing training and troubleshooting time.
- ◆ **Integrated Warning/Action system** — the **ATTN (Attention) key** blinks on the control panel when the printer detects an error condition, potential error condition, or when you make a change that suggests recalibration or other action to ensure best print quality. There are two types of ATTN messages:
 - ◆ **Actions** — the printer has detected an error condition that stopped printing or will prevent printing from starting. You must correct the error before the printer will be ready to print. When the printer senses that the error condition has been addressed, the Action will be deleted the next time the ATTN key is pressed.
 - ◆ **Warnings** — the printer has detected a condition that, if left unaddressed, could result in substandard prints or a condition that will require an action before printing can continue. Any action on your part is optional; printing is not interrupted for a Warning message.

CHAPTER 2

Using the Control Panel

This chapter describes the functions of the control panel.

- ◆ Overview (page 2-2)
- ◆ Front Page (page 2-4)
- ◆ Navigation Keys (page 2-8)
- ◆ Menu (page 2-9)
- ◆ Menu Tree (page 2-17)

Overview

The touch-screen control panel shows you the printer's current status, and enables you to interact with the printer when changing media and ink, respond to an error condition, or configure options. There are three main control panel screens:

- ◆ Ready (Status) Screen
- ◆ Front Page
- ◆ Menu

Ready Screen

When you press the Online/Offline button from the Front Page screen, the printer goes online and the Ready screen appears. The Ready screen displays the current status of the printer and any currently printing job. It displays when the printer is online (communicating with the print server) and either ready to print or printing.



Fig. 2-1 Ready screen

Front Page

When you press the Online/Offline button from the Ready Screen, the printer goes offline and the Front Page screen appears. This screen is the top level of the printer's menu system. It provides access to the most frequently-used offline functions. For details, see "Front Page" on page 2-4.

Menu

When you press the Menu key on the Front Page screen, the Menu appears. The Menu provides access to advanced configuration options. For details, see "Menu" on page 2-9.

User Assistance

The control panel provides various forms of online user assistance:

The **? button** provides an explanation of the current function, with some guidance for what to do next.

The **ATTN (Attention) key** blinks on the control panel when the printer detects an error condition, potential error condition, or when you make a change that suggests recalibration or other action to ensure best print quality. There are two types of ATTN messages:

- ◆ **Actions** – the printer has detected an error condition that stopped printing or will prevent printing from starting. You must correct the error before the printer will be ready to print. When the printer senses that the error condition has been addressed, the Action will be deleted the next time the ATTN key is pressed.
- ◆ **Warnings** – the printer has detected a condition that, if left unaddressed, could result in substandard prints or a condition that will require an action before printing can continue. Any action on your part is optional, printing is not interrupted for a Warning message.

When the printer issues one of these messages, the ATTN key will blink, and an alert beep will sound (unless disabled, see page 2-13). Press the ATTN key to display a list of message titles, and select a title to display a detailed cause-and-recovery screen.

If you choose to not correct a Warning condition and resume printing, the ATTN key will remain displayed, but will not blink until the printer issues a new Warning or Action message. The messages can be dismissed by correcting the condition, or by pressing the applicable key on the detail screen.



Tip See page 2-13 for instructions for choosing an Expert or Novice mode for displaying these messages (Expert mode routes most messages to the Actions & Warnings menu), and for disabling or enabling the audible alarm. See the table beginning on page B-8 for a list of errors and recovery procedures.

Front Page

The Front Page provides access to the most frequently-used printing and maintenance functions. For advanced configuration options, press the Menu key (see “Menu” on page 2-9 for instructions).

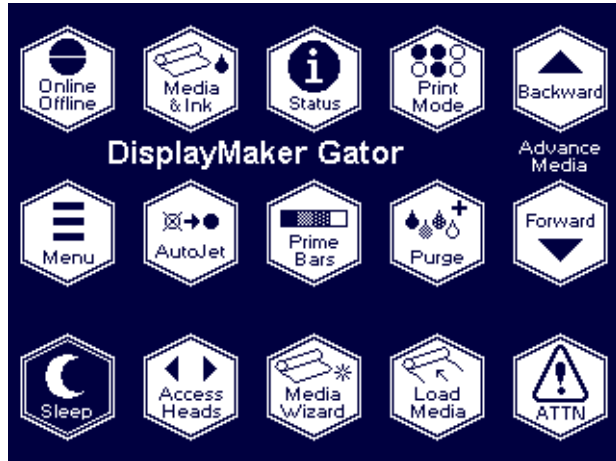


Fig. 2-2. Front Page

- ◆ **Printer Name** — displays the name of the printer as defined on the print server.
- ◆ **Online/Offline** — returns the printer to the Ready screen, when it is online and ready to receive print jobs.

- ◆ **Media & Ink** — displays a listing of the media and ink currently installed in the printer. Press the **▼** and **▲** keys to highlight “Media” or one of the inks, then press **▶** (Proceed) to display information about the selection. From this screen, you can press the **◀** and **▶** keys to scroll between screens. Press **▶** (Proceed) to return to the list, then **⤴** (Menu Out) to display the Front Page screen.

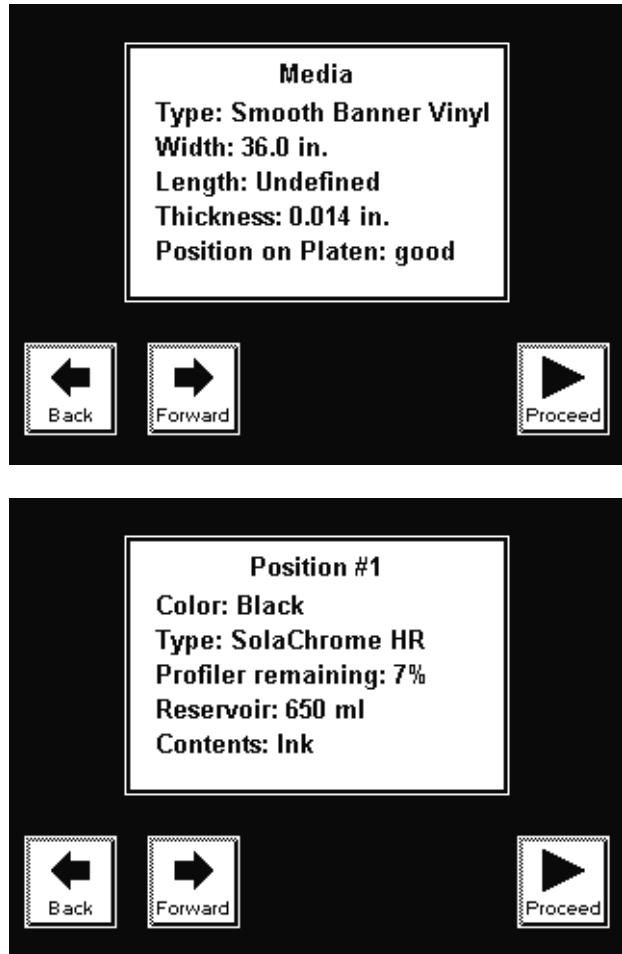


Fig. 2-3. Media Info, Ink Info screens

- ◆ **Status** — displays system parameters and the status of all user-configurable options. Press the ◀ and ▶ keys to scroll between pages. To change an option, go to the Printer Configuration section of the menu.

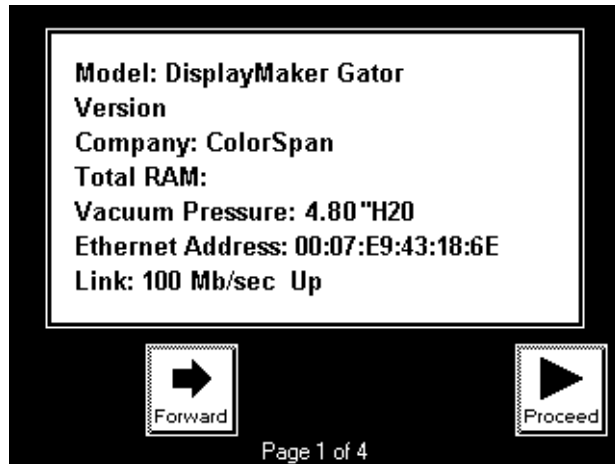


















Fig. 2-4. Status page 1

- ◆ **Print Mode** — sets print quality mode. See “Selecting a Print Mode” on page 3-4 for instructions.
- ◆ **Advance Media** — press the ▼ key to advance the media forward. When you press and hold the ▼ key, the media moves faster. Press the ▲ key to reverse the media back onto the supply spool. When you press and hold the ▲ key, the media moves faster. You can also press the Media Advance rocker switch, mounted on the OHS near the postheater, to move the media in either direction.
- ◆ **Menu** — displays the complete printer menu for access to advanced configuration options (see “Menu” on page 2-9 for instructions).
- ◆ **AutoJet** — detects deflected and non-firing jets, and substitutes working jets for them (in Production and Quality modes).
- ◆ **Prime Bars** — fires all jets by drawing a set of lines called prime bars. This is a good way to inspect and prepare the jets for printing after they have been idle (see “Print Prime Bars” on page 3-8). You can also print a similar pattern called Print Jet-Out Lines, which shows which jets have been detected and replaced by AutoJet (see page 2-14 for details).

- ◆ **Purge** — performs a Purge-n-Wipe, which purges the print-heads then wipes them in the service station, to help recover missing jets. Print a prime bars pattern to verify jet recovery. See “Checking Jet Health” on page 3-7 for instructions.
- ◆ **Sleep** (visible when heads are not capped) — verifies that the capping pad is disengaged (in the lower position), the printer turns off the heaters, detensions the media, and disables the OHS. When you manually engage the capping levers, the capping pad sensor is detected and the control panel disables most functions except for Wake. See “Cap the Printheads” on page 3-13 for instructions.
- ◆ **Wake** (visible when the printheads are capped) — the operator lowers the capping pad, then selects this option to restore the printer from standby mode, enable the OHS, and move the printhead carriage back to the service station (at the far right end of the printer). When the printheads are uncapped, the control panel is fully functional. See “Uncap the Printheads” on page 3-14 for instructions.
- ◆ **Access Heads** — moves the printhead carriage out from the service station to the capping station. This is the same functionality as the Access Printheads option on the Maintenance menu.
- ◆ **Media Wizard** — provides direct access to the printing parameters stored for the currently loaded media (see “Media Wizard” on page 3-44 for details).
- ◆ **Load** (visible when the supply and takeup are unloaded) — enables you to load media on the supply and/or takeup, and properly tensions the system. See “Loading Roll-Fed Media” on page 3-16 for instructions.
- ◆ **Unload** (visible when the supply and takeup are loaded) — detensions and enables you to unload the supply and takeup system. See “Unloading and Cutting Roll-Fed Media” on page 3-25 for instructions.
- ◆ **Reload** — (visible when printer was loaded with media) enables you to load another roll or sheet of the previously printed media with the same settings, without stepping through the media load process.
- ◆ **ATTN** (Attention)— blinks on the control panel when the printer detects an error condition, potential error condition, or when you make a change that requires recalibration or other action to ensure best print quality. See “User Assistance” on page 2-3 for further details.

Navigation Keys

The following table shows you how to move through the menu system and perform printer control functions.

Key	Description
	Display Menu – displays the printer menu.
	Menu Up/Down – moves the menu highlight up and down the menu.
	Menu Top/Bottom – moves the menu highlight to the top or bottom for the menu.
	Menu Out – moves to the next higher menu in the hierarchy.
	Menu In – selects the highlighted menu option.
	Back/Forward – moves between pages or screens, or selects between other options.
	Proceed – initiates the selected function.
	Help – displays a summary description of the highlighted menu options.
	Pause/Resume – pauses or resumes printing during a calibration.
	Cancel – cancels the current menu function or choice.
	Yes/No – indicates a Yes or No.
	Continue (error screen) – proceeds to the next step in a troubleshooting dialog.
	Ignore (error screen) – specifies “ignore” in a troubleshooting dialog.
	Retry (error screen) – specifies “retry” in a troubleshooting dialog.
	Reboot Printer (error screen) – specifies “restart printer” in a troubleshooting dialog.
	Information (error screen) – displays further information about the error.

Menu

The menu has these main sections:

- ◆ Calibrate Printer (see below)
- ◆ Printer Settings (page 2-10)
- ◆ Maintenance (page 2-14)
- ◆ Service Printer (page 2-15)
- ◆ User Diagnostics (page 2-15)
- ◆ Warnings & Actions (page 2-16), shown in Expert Messages Mode only

This section explains each of the functions on the printer menu. See “Menu Tree” on page 2-17 for a listing of all menu options.

Calibrate Printer

For details on these options, see Chapter 4, Calibrating the Printer.

- ◆ **Media Feed** — eliminates banding between print swaths (“stitch banding”) by calibrating media advance. See “Media Feed” on page 4-6 for instructions.
- ◆ **Manual Calibrations** — allows you to calibrate the printer visually, without the printer’s digital imaging sensor. Inaccurate judgments by the operator during these tests could result in substandard output. See “Manual Calibrations” on page 4-8 for instructions.
 - ◆ Manual Bidi Registration
 - ◆ Manual X Head Registration
 - ◆ Manual Jet Mapping — the manual version of AutoJet
 - ◆ Jet Status Lines — prints the Manual Jet Mapping pattern without running the calibration
 - ◆ Default Registration Data
- ◆ **Auto Calibrations** — see “Auto Calibrations” on page 4-20 for instructions.
 - ◆ Auto Bidi Calibration — ensures that every working jet fires a pixel at precisely the same location, in both directions of travel
 - ◆ Auto H2H Calibration — aligns the printheads relative to each other
 - ◆ AutoJet Calibration — locates and substitutes missing jets for working jets
 - ◆ Full AutoSet — runs AutoJet and AutoBiDi in sequence

- ◆ **AutoTune** — schedules jet maintenance to run automatically after a certain number of prints have printed. See “Auto-Tune” on page 4-4 for instructions.
- ◆ **AutoRecover** — performs a Purge-n-Wipe at the start of a print job (before printing) if a Purge-n-Wipe has not been performed for a specified amount of time.
- ◆ **Calibration Summary** — prints summary information with the AutoSet calibration test patterns, or transmits registration or jet data to a log file on the print server. “Auto Calibrations” on page 4-20 for details.
- ◆ **Configure for Profile Creation** (cut sheet printing only) — causes all calibration prints to print on the same cut sheet, rather than ejecting the sheet after each calibration print. Automatically disabled after all calibration prints are finished, when a print job is received from the RIP, or when roll-fed media is loaded. Also allows you to configure a dry time before calibration readings are taken.

Printer Settings

Printer Settings enables you to set many options that control how the printer operates. Settings saved by the Media Wizard are indicated by *MEDIA WIZARD* in the margin.

MEDIA WIZARD

- ◆ **Takeup Tension** — adjusts the media takeup tension, which is required for proper media feeding. Insufficient takeup tension could result in inaccurate media feed and media buckling.

MEDIA WIZARD

- ◆ **Supply Out Detection** — for roll-fed media, the printer usually monitors the supply spool to detect when it runs out of media. You can use this menu option to disable media out detection when you keep the takeup spool pin release tool (part number 0504334, see “Takeup Spool Pin Release” on page 3-26 for instructions) installed for printing rather than to freely pull media from the supply.

MEDIA WIZARD

- ◆ **Heater Temp Settings** — selects one of several pre-defined temperatures, plus one custom, user-defined setting. Excessively high heat could cause the media to deform or stick to the platen, while not enough heat could result in partially dried prints. For instructions, see “Setting Heater Temperatures” on page 3-47.

MEDIA WIZARD

- ◆ **Platen Vacuum Control** — turns on the vacuum fans, then allows you to raise or lower the fan speed. Raise the speed if the media is rising off the platen, lower the speed if the

media is buckling or wrinkling. Turn off the vacuum for light-weight media such as paper or fabrics.

MEDIA WIZARD

- ◆ **Drying Delay** — a drying delay slows throughput (media advance speed) to allow prints to dry more thoroughly. Select the shortest delay that permits complete drying.
- ◆ **Dryer Fans** — specifies whether the optional auxiliary dryer fans will run during printing.
- ◆ **Excess Ink Sensor** — enables you to disable the excess ink sensor if it is malfunctioning, or enable it after it has been replaced. When the sensor in the excess ink reservoir under the OHS indicates that the reservoir is full, it generates an Action message on the control panel, and printing cannot proceed. Do not disable the sensor unless a malfunction erroneously prevents printing.
- ◆ **Capping Station Sensor** — allows you to disable the capping station sensor if it is malfunctioning, or enable it after it has been replaced.

MEDIA WIZARD

- ◆ **Media Out Sensor** — allows you to disable the input table's media out sensor if it is malfunctioning, or enable it after it has been replaced. Use care when printing with this sensor disabled, to avoid printing on the platen or striking the carriage against the media.
- ◆ **Gutter Settings** — determines the appearance of the top and side gutters:
 - ◆ **Top Gutters** — allows you to turn **On** or **Off** the gutter pattern at the top edge of the print, which shows data about the print such as date and time printed and print mode, plus write-in blanks for other data.

```
Job: Test Job   Ink: SolaChrome HR   Media: UltraSmooth  
Date/Time: 2008-11-19 10:52:11  
Printmode: Production Quality  
Printer: DisplayMaker Gator   Version :  
Transform: ( ) ----- Calibrated: Y N  
Printed By: -----
```

Fig. 2-5. Top gutter data

- ◆ **Side Gutters** — sets the side gutter pattern to **Narrow**, **Medium**, or **Wide** sizes, or turns them **Off**. Side gutter patterns help keep the ink jets open by firing ink through them in a pattern outside the printed image area. You can print gutters on the left side only of the media (closest to the capping station), or both sides.

Printing on the left side only reduces ink usage, while printing on both sides can keep the inkjets clearer. Using this feature decreases the width available for printing the job.

- ◆ Left Platen Gutter — determines when the jets will fire in the left spittoon to keep all jets firing correctly. Turning off this function may speed throughput with narrower media, since it allows the carriage to turn around before reaching the end of the platen, but it may also necessitate more frequent Purge-n-Wipe operations to clear clogged jets. **Always On** fires the jets in the spittoon with all media widths. **Off for Media <40 In. Wide** fires the jets in the spittoon only if the media is less than 40 inches wide. **Off for Media <71 In. Wide** fires the jets only if the media is less than 71 inches wide.
- ◆ Platen Gutter Spits — sets the amount of ink used by the maintenance spits to High, Medium, and Low. To conserve ink, use the lowest setting that keeps the jets open. The default High.

- ◆ **Margin Settings**

- ◆ Space Between Prints (roll-fed) — sets the blank space between print jobs, between 0 and 10 inches (25 cm).
- ◆ Right and Left Margin — sets the amount of blank space for the right and left margins, between 0 and 5 inches (13 cm). Optionally, on rigid media only, you can print up to or past the right and left edges (see “Edge-to-Edge Printing” on page 3-38).
- ◆ Leading Margin (cut-sheet) — sets the amount of blank space at the leading edge of cut-sheet media.
- ◆ Trailing Margin (cut-sheet) — sets the amount of blank space at the trailing edge of cut-sheet media.

MEDIA WIZARD

- ◆ **Media Measure Type** — for cut-sheet media, you can choose one of three levels of precision for finding the left, right, and front edges of the media.
 - ◆ Minimal — measures the width of the media once, and finds the front right edge
 - ◆ Standard — measures the width of the media once, and finds the right and left front edges to estimate skew
 - ◆ Maximal — measures the width of the media in two places, and finds the right and left front edges to estimate skew

Choose Minimal for fastest throughput with media in perfect condition, Maximal for greatest precision and skew detection when printing edge-to-edge.

MEDIA WIZARD

- ◆ **Quality Check** — determines how AutoTune errors are handled (see “Auto Calibrations” on page 4-20 for information about AutoTune).
- ◆ **Print Position** — when the printed image does not span the entire width of the media, positions the printed image flush right (nearest the control panel), flush left (nearest the capping station), or centered on the media.
- ◆ **Stiff Roll-Fed Media Handling** — when enabled, detensions then retensions the takeup system before every print job, for more accurate feeding of adhesive-backed and other stiffer roll-fed media types.
- ◆ **Standby Wait** — sets the period of time to wait for a print job before going into standby mode, which turns off the heaters and detensions the supply and takeup system.
- ◆ **Expert/Novice Messages** — **Novice** mode presents Warnings (alerts that do not prohibit printing) and Actions (conditions that require user intervention before printing can proceed). **Expert** mode presents Actions only, presents fewer “press Proceed” prompts after an Action has been addressed. The default is Novice mode.

When in Expert mode, active Warnings and Actions can be displayed by selecting **Warnings & Actions** from the menu, since Warnings will not cause the ATTN icon will appear in Expert mode. See “User Assistance” on page 2-3 for further information about Actions and Warnings. See “Warnings & Actions” on page 2-16 for further information about this menu option.

- ◆ **Audible Alarm** — enables and disables the audible alarm beep that sounds with Warning and Action messages.
- ◆ **Localization** — allows you to select units of measure (metric or English), time format (12-hour or 24-hour), and date format (YYYY-MM-DD, MM-DD-YYYY, and DD-MM-YYYY).
- ◆ **Head Height** — moves the printhead carriage over the platen so you can adjust the head height. See “Set the Printhead and Camera Height” on page 5-12 for instructions.
- ◆ **Service Station** — allows you to set the alignment and height of the service station wipers. For instructions, see “Calibrate the Service Station” on page 5-17.
- ◆ **Automatic Eject** (cut sheet printing only) — when enabled, the sheet is automatically ejected at the end of the print job. When disabled, the next job(s) will print on the same sheet until there is no more room to print.

- ◆ **Idle Spits** — when the printer is idle, it automatically spits a small amount of ink into the service station to keep the ink-jets open and working. To reduce the amount of ink consumed during idle spitting, you can set the operation to Medium or Low. To ensure that the printheads are always at maximum readiness, use the High setting.
- ◆ **Low Ink Warning** — defines the amount of ink remaining in the ink box supply at which the printer will display a “low ink” message on the control panel.
- ◆ **Printer Name** — displays a keypad to change the printer name displayed on the control panel and RIP or ColorSpan Print Server. Alternatively, the printer name can be changed from the ColorSpan Print Server.
- ◆ **Restore All Defaults** — restores all Printer Configuration settings to their factory default values, and zeroes all registration data. After running this option, all calibration values must be reestablished by running AutoSet or manual calibrations.

Maintenance

- ◆ **Access Printheads** — moves the printhead carriage out from the service station to the capping station. This is the same functionality as the Access Heads button on the Front Page.
- ◆ **Purge A Color** — purges the four printheads of a single color, rather than all sixteen printheads. This is helpful when recovering stubborn jet-outs.
- ◆ **Print Jet-Out Lines** — prints a version of the prime bars (see page 2-6), in which missing jets that are replaced are marked with a black square.
- ◆ **Fill Service Station** — fills the service station reservoir with cleaning solvent.
- ◆ **Reset Reservoir Filters** — after you replace the ink reservoir filters, select this option to reset the ink counts to zero. See “Replace Ink Filters” on page 5-19 for instructions.
- ◆ **Respool Media** — this option enables you to respool media from the supply directly to the takeup (in either direction) without passing over the heaters or platen.
- ◆ **Clean Grit Rollers** — advances the grit rollers continuously so they can be cleaned (with no media loaded).
- ◆ **Capping Purge** — enables you to disable or enable the purge that is automatically performed prior to capping.

- ◆ **Printheads Procedures** — see “Printhead Maintenance” on page 5-8, for instructions on using the following options:
 - ◆ **Cleaning Solvent Soak** — empties the printheads of all ink, fills all heads with cleaning solvent, and prompts you to cap the printheads.
 - ◆ **Prep for Storage/Shipping** — empties the printheads of all ink, fills all heads with cleaning solvent, then empties the printheads, in preparation for long-term storage or shipping.
 - ◆ **Load Ink in All Heads** — runs the following three operations in sequence.
 - ◆ **Fill Heads with Solvent** — fills the printheads with cleaning solvent.
 - ◆ **Fill Heads with Ink** — fills the printheads with ink.
 - ◆ **Empty Heads (Fill With Air)** — fills the printheads with air.

Service Printer

These tests are for factory, service, and technical support use.

User Diagnostics

User Diagnostics presents an interactive troubleshooting program to diagnose problems before calling MacDermid ColorSpan Technical Services. It walks you through a series of tests and checks for certain printer functions. The printer asks you to make observations or run simple tests to help it diagnose problems and suggest corrective actions. It has the following sections:

- ◆ **Printhead Jet Statistics**
- ◆ **VideoNet Status**
- ◆ **VideoNet Connection**
- ◆ **Carriage Motion**
- ◆ **Calibration**
- ◆ **Vacuum Pressure**
- ◆ **Warnings and Actions List** — table of all actions and warnings with cause and recovery. This is an abbreviated version of the table “Actions and Warnings” on page B-8.
- ◆ **Error History**
- ◆ **Log Error History**

Warnings & Actions

When in Expert mode, active Warnings, Changes, and Actions can be displayed by selecting Warnings & Actions from the menu, since Warnings will not cause the ATTN icon will appear in Expert mode. This option does not appear in Novice mode.

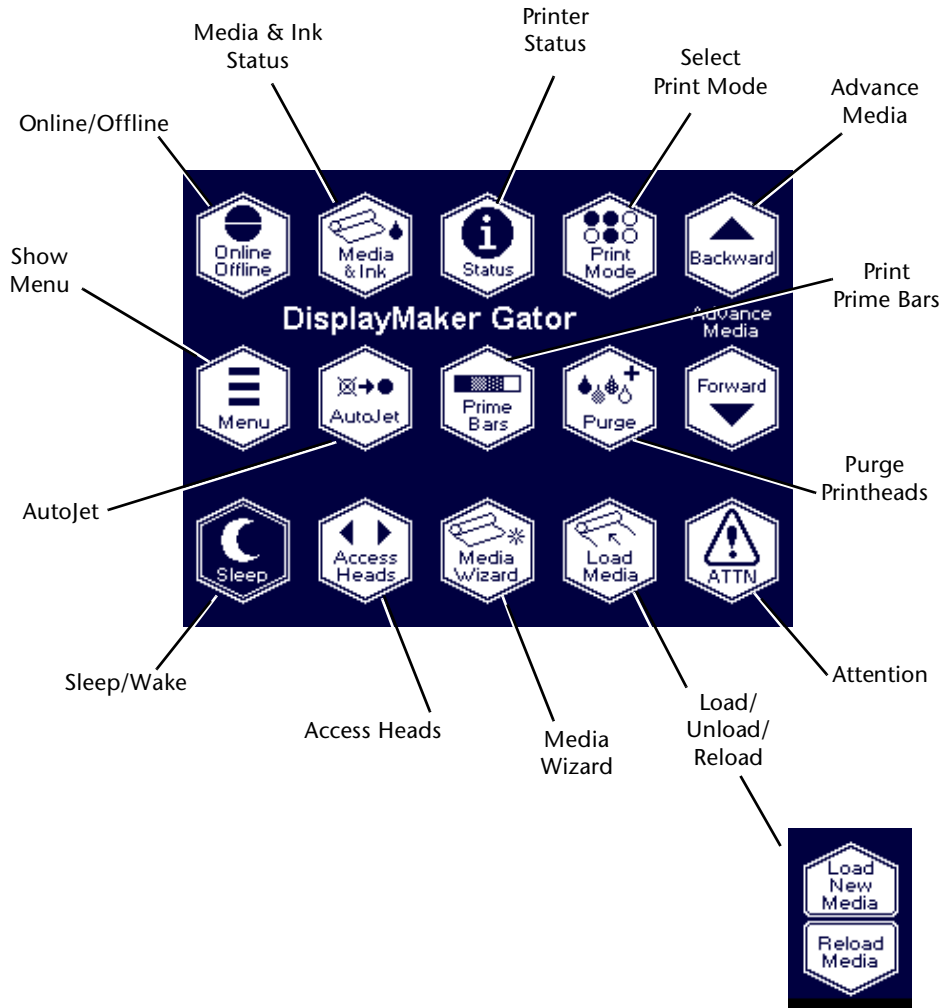
See “User Assistance” on page 2-3 for further information about Actions and Warnings, and the table beginning on page B-8 for a list of recovery procedures. See page 2-13 for a description of the Expert/Novice Messages mode.

Print Menu Tree

This option prints all of the menu options in a hierarchical tree format.

Menu Tree

Front Page



Menu

This menu tree reflects version 3.11 of the embedded printer software.
Refer to the *Release Notes* for more recent versions.

Calibrate Printer

Media Feed

Manual Calibrations

- Manual Bidi Registration
- Manual X Head Registration
- Manual Jet Mapping
- Jet Status Lines
- Default Registration Data

Auto Calibrations

- Auto Bidi Calibration
- Auto H2H Calibration
- AutoJet Calibration
- Full AutoSet

AutoTune

AutoRecover

Calibration Summary

- AutoSet Summary
- Log Head Registration Data
- Log Jet Data

Configure for Profile Creation

Printer Settings

- Takeup Tension
- Supply Out Detection
- Heater Temp Settings
- Platen Vacuum Control
- Drying Delay
- Dryer Fans*
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CHAPTER 3

Ink and Media

This chapter describes how to use ink and media with the printer:

- ◆ **Ink**
 - ◆ Ink System Overview (page 3-2)
 - ◆ Idle Jet Maintenance (page 3-3)
 - ◆ Selecting a Print Mode (page 3-4)
 - ◆ General Printing Tips (page 3-6)
 - ◆ Checking Jet Health (page 3-7)
 - ◆ Loading Ink (page 3-10)
 - ◆ Capping the Printheads (page 3-13)
- ◆ **Media**
 - ◆ Loading Roll-Fed Media (page 3-16)
 - ◆ Unloading and Cutting Roll-Fed Media (page 3-25)
 - ◆ Respooling Media (page 3-27)
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 - ◆ Reloading Rigid Media (page 3-36)
 - ◆ Edge-to-Edge Printing (page 3-38)
 - ◆ Media Wizard (page 3-44)
 - ◆ Setting Heater Temperatures (page 3-47)

Ink System Overview

The printer's ink system consists of the following components:

- ◆ **Ink boxes** — four 3-liter boxes of SolaChrome-HR solvent pigmented ink (CMYK) plus SolaChrome cleaning solvent.
- ◆ **Ink tubes** — carry ink and cleaning solvent to the printheads, and cleaning solvent to the service station.
- ◆ **Printheads** — permanent piezo-based printheads.
- ◆ **Vacuum/Pressure (VP) System** — provides vacuum to maintain negative pressure at the printheads, and pressure to purge the ink tubes and printheads.
- ◆ **Profilers** — provided with each ink box, they contain information about the ink and must be installed together with their corresponding box. Profiler data are used to track ink levels, and to help ensure optimal output quality and compatibility with printer components.
- ◆ **LEDs** — the LED next to each profiler illuminates when the box is almost empty, to alert the operator to exchange the box for a full one.



Caution Use only genuine ColorSpan inks and cleaning solvent in the printer. Use of any other inks or cleaning fluids **COULD DAMAGE THE PRINTER AND WILL VOID THE WARRANTY.**

Idle Jet Maintenance

Due to the evaporation of the solvents in solvent-based inks, the ink jets in solvent printers are susceptible to clogging. To minimize jet-outs, keep the printer printing and clean, and use the printer's jet maintenance features.

The following table shows the recommended maintenance schedule while the printer is idle. See Chapter 5, *Maintaining the Printer*, for a complete listing of recommended maintenance to keep the printer operating well and covered by the manufacturer's warranty.

Time Period	Recommended Maintenance
1 hour	<p>When not printing while the printheads are uncapped, a small amount of ink is expelled (spit) periodically into the spittoons, which drain into the excess ink containers.</p> <p>See "Checking Jet Health" on page 3-7 for instructions on using Purge-n-Wipe and AutoJet. See "AutoTune" on page 4-4 for instructions on scheduling Purge-n-Wipe and AutoJet to run automatically.</p>
<i>Momentary Power Down</i>	<p>If the power must be removed for a brief period of time, leave the carriage over the service station (<i>not</i> the capping station) to allow the ink, which will no longer be held inside the printheads by the vacuum/pressure system, to drain into the excess ink reservoir. Power up the printer as soon as possible and cap the printheads if the printer will be idle for 4 hours or more.</p>
2 hours to 4 days	<p>Cap the printheads to prevent drying and conserve ink (idle spit is suspended during capping). See "Capping the Printheads" on page 3-13 for instructions.</p> <p>This capping period can successfully extended if every four days the printheads are uncapped, purged to recover missing jets, prime bars or other print is made, and recapped.</p>
	<p>For best results, do not allow the printer to remain capped for more than 4 days; otherwise, extensive cleaning of the printheads may be required. If the printer must remain capped longer than four days (such as during a long holiday weekend, for shipping, or storage), follow the applicable procedure below:</p>
4 - 14 days	<p>Cap the printheads as described in "Capping the Printheads" on page 3-13.</p>
14 - 30 days	<p>Fill the printheads with cleaning solvent and cap the printheads with a solvent-soaked pad. See <i>Cleaning Solvent Soak</i> on page 5-8 for instructions.</p>
30 days or more	<p>Flush the printheads with cleaning solvent, empty the printheads, and cap. See "Extended Power Down and Restart" on page 5-21 for instructions.</p>

Selecting a Print Mode

- ◆ The **bidirectional** print modes (printing occurs in both directions) enable you to select the combination of print speed and quality required. Speed or throughput depends on the mode selected, and by other factors such as the width of the image.
- ◆ The **unidirectional** modes are available for rigid cut-sheet printing only. Unidirectional printing eliminates the bidirectional misalignment that occurs when printing on media that is not perfectly flat.
- ◆ The printer automatically accepts and prints jobs from the RIP at either **600x600** or **600x300** dpi.
- ◆ **Jet replacement** refers to the printer's ability to locate and replace ink jets that are clogged or misfiring. High Quality mode has the best jet replacement, Billboard Quality mode has the highest speed.
- ◆ The software will turn on the optional auxiliary dryer fans automatically during printing, and increase media advance speeds accordingly, if the fans are installed and enabled (**Menu > Printer Settings > Dryer Fans**)

1. On the Front Page screen of the control panel, press the **Print Mode** key.

The print mode menu appears, with these options:



Mode	Jet Replacement
Billboard	None
Production	Standard
High Quality	Maximum

When configured for rigid printing, these unidirectional print modes are also available:

Mode	Jet Replacement
Billboard Unidirectional	None
Production Unidirectional	Standard
High Quality Unidirectional	Maximum

Fine Text mode is also available in Production and High Quality modes. Fine Text prints at half the normal head speed to improve the output quality of fine text and line art.

2. Press the ▲ and ▼ and keys to highlight a print mode.
3. Press the ✓ (Set) key to select the print mode.

General Printing Tips

- ◆ See “Important Operating Notes” on page 1-3 for important information on operating the printer.
- ◆ **Before printing on vinyl media that has been loaded on an idle printer overnight or longer**, advance the portion of the media that has been resting on the preheater (prior to the platen) past the print zone. In this situation, the vinyl tends to retain the shape of the preheater, making it more likely that the printheads or carriage will strike the media.
- ◆ **To pause printing**, press the Pause button on the control panel. While printing is paused, you can change the Heaters, Vacuum, and Dry Delay settings. Changed settings will remain in effect until media is loaded, when the settings saved in the Media Wizard will be restored. While printing is paused you can also “pause-swap” ink (see “Pause-Swapping Ink” on page 3-12 for instructions).

Checking Jet Health

The printer's automatic jet maintenance features (gutter printing, spits, service station wipes) are designed to keep the inkjets from clogging. In addition, when AutoJet detects a missing jet, it attempts to replace it with a working jet on the same or another printhead (in Production and High Quality modes). In this way, printing occurs with all jets for maximum quality.

When you notice a decrease in print quality, one or more inkjets may be clogged. To recover clogged jets:

1. Print a **Prime Bars** pattern to determine whether there are any missing jets (see page 3-8).
2. If there are any missing jets, **Purge-n-Wipe** the printheads (see page 3-8) or **Print Jet-Out Lines** (page 3-8).
3. Run **AutoJet** (page 4-3) or **Manual Jet Mapping** (page 4-13).
4. Repeat this process until all jets are working or substituted for another jet. This process is summarized in Fig. 3-1, below.

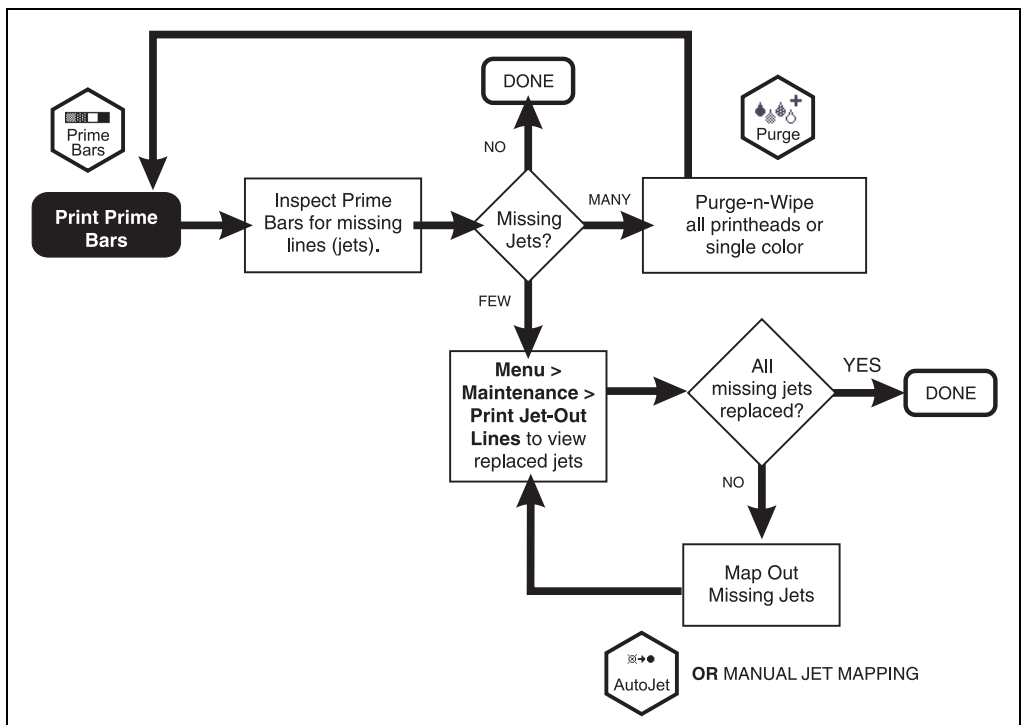
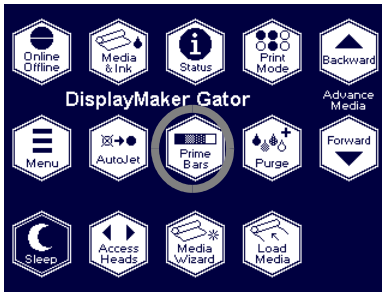


Fig. 3-1. Checking jet health and recovering jets

Print Prime Bars



1. From the control panel Front Page screen, press the **Prime Bars** key.

The control panel displays a prompt asking you to enter the total width of the prime bar pattern you wish to print.

2. Enter a width for the prime bar pattern by pressing the ▼ and ▲ keys.
3. Press the ► (Proceed) key to continue.

The printer prints the prime bar pattern. The prime bars will show correctly working jets with a solid line, and missing jets with no line.

Purge-n-Wipe Printheads

When prime bars indicate missing or deflected jets, automatic jet maintenance should be supplemented by a Purge-n-Wipe operation: air pressure forces ink through the inkjets, then the service station dips the wipers in cleaning solvent and wipes the inkjet orifice plate.

You can purge all sixteen printheads at once or purge a single color (four printheads).

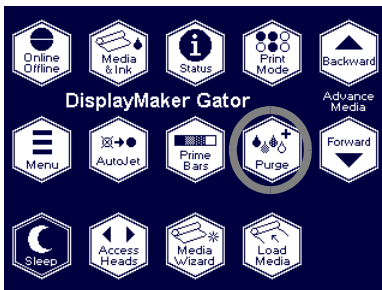
To purge-n-wipe all sixteen printheads:

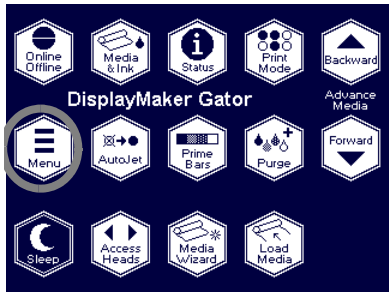
1. From the control panel Front Page screen, press the **Purge** key.

The control panel prompts you to press the ► (Proceed) key to continue.







2. Press the ► (Proceed) key to continue.

The printer purges the printheads with air pressure, then wipes them with the service station wipers. Approximately 1 milliliter of ink per color is expelled by this purge.







To purge-n-wipe a color (four printheads):

1. From the control panel Front Page screen, press the  (Menu) key.
2. Press the  key to highlight **Maintenance**.
3. Press the  (Menu In) key.
4. Press  to highlight **Purge a Color**.
5. Press the  (Menu In) key.
6. Press the  (Proceed) key to continue.

The control panel displays a list of ink colors.

7. Press  repeatedly to select an ink color to purge.
8. Press  (Proceed) to continue.

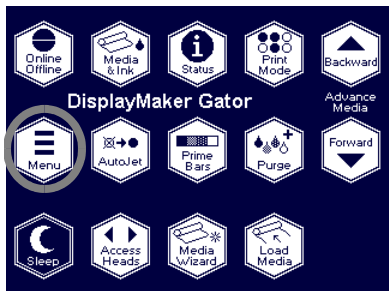
The printer purges the printheads with air pressure, then wipes them with the service station wipers. Approximately 1.7 milliliters of ink per color are expelled by this purge (and the purges triggered by AutoTune and AutoRecover).








Note

Purging a single color is more effective because more pressure is applied to each printhead, but a possible side effect of repeated single-color purges is clogged jets in other colors. Repeated single-color purges should be followed by a purge of all printheads.

Print Jet-Out Lines



1. From the control panel Front Page screen, press the  (Menu) key.
2. Press the  key to highlight **Maintenance**.
3. Press the  (Menu In) key.
4. Press  to highlight **Print Jet-Out Lines**.
5. Press the  (Menu In) key.

The Jet-Out Lines pattern prints. Substituted jets are marked with a black square.

Map Out Missing Jets

If the Jet-Out Lines (above) reveal an blank or wavy lines, the corresponding jets should be mapped out. For instructions, see “AutoJet” on page 4-3 or “Manual Jet Mapping” on page 4-13. When all missing jets have been substituted, printed output will appear as if all jets are working.

Loading Ink

When to Load Ink

The amount of ink in the ink box is tracked by the printer software and recorded on its corresponding profiler. When the ink box is almost empty, the LED above the corresponding profiler will blink. You should replace the ink box with a full ink box of the same color ink as soon as possible. The status of each ink box and profiler is indicated by the LEDs as follows:

- ◆ **Off** – OK
- ◆ **Slow Blink** – profiler is being verified after insertion
- ◆ **Fast Blink** – low ink warning (300 ml remaining)
- ◆ **On** – ink system action (ink empty, ink pump failure, profiler error, or other), see control panel

Unloading an Empty Ink Box

1. Remove the profiler.
2. Lift the box out of its holder and turn the box upside down so the ink tube is pointing up.
3. Lift the retaining clip on the ink tube connector and disengage the tube from the ink box.
4. Remove and dispose of the ink box (refer to the MSDS for proper disposal procedures).

Loading a Full Ink Box

1. Open the new ink box and locate the supply connector.



Fig. 3-2. Ink box with supply connector

2. Connect the ink supply tube to the ink box.

Grasp and squeeze the ink tube connector as shown, engage the connector to the ink box, and release the connector. Ensure that the connectors are firmly engaged before proceeding.




Fig. 3-3. Connecting the ink tube to the ink box

3. Invert and install the ink box into position in the holder.
The position for each ink color is shown on a label below the ink box holder (on the pump cover) and on the profiler docking station.
4. Install the profiler in the corresponding docking station slot.

Pause-Swapping Ink


You can replace one or more ink boxes during a print by pausing the printer:

1. On the printer control panel, press the  (Pause) key.
2. Remove the old profiler.

This signals to the printer that the ink box is being replaced.

3. Disconnect and remove the old ink box.
4. Install and connect the new ink box.
5. Install the profiler that was included with the new ink box.

The LED above the profiler blinks slowly while the printer reads and verifies the profiler. The LED goes out after the profiler has been verified as a valid profiler with ink remaining.

6. Repeat steps 2 through 5 for any other ink boxes you want to replace.
7. On the printer control panel, press the  (Resume) key.

Capping the Printheads

Capping the printheads prevents the ink from drying out and clogging the ink jets. Since the ink jets are automatically exercised (a small amount of ink is expelled) when idle, capping is only necessary if the printer will be idle for a long period (overnight or longer).

Capping the printheads is one component of Sleep Mode:

- ◆ The printer enters standby mode, which also occurs after the printer has been idle: the heaters are switched off, and the supply & takeup system is detensioned.
- ◆ The OHS is disabled, which turns off power to the pumps.
- ◆ When you manually engage the capping levers, the capping station sensor is detected and the control panel disables most functions except for Wake.

Cap the Printheads

1. Prepare the capping station by placing a sheet of SolaChrome Printhead Capping Film over the capping station pad.

Fold the capping film underneath the capping pad, to allow any ink that escapes the printheads to flow into the drip tray.



Caution To cap the printheads, use only SolaChrome Printhead Capping Film. Damage to printheads resulting from the use of poorly performing plastic films is not covered by the printer warranty.



2. Press the **Sleep** key on the Front Page screen.

The control panel asks you to confirm that you want to cap the printheads.

3. Press the Proceed key to cap the printheads.

The printhead carriage moves quickly to the left end of the printer, over the capping station.

4. Engage the capping station by pulling forward on both levers simultaneously, until the capping pad touches the printheads and the carriage just begins to move up.

Do not raise the capping pad beyond this point.

5. Press Proceed.

The control panel displays the Front Page screen. Note that all but a few functions are disabled until you uncapped the printheads.

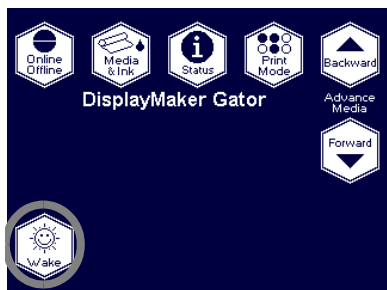
Uncap the Printheads

Uncapping the printheads is one component of the Wake function, which reverses the Sleep function:

- ◆ The printer leaves standby mode: the heaters are switched on, and the supply & takeup system is tensioned (loaded).
- ◆ The OHS is enabled, which turns on power to the pumps.
- ◆ When you manually disengage the capping levers, the capping pad sensor is detected and the control panel enables all functions and displays the Sleep key.





Tip Since some ink may spill from the film-wrapped capping station, wear latex gloves to prevent staining your hands during this procedure.



1. Press the **Wake** key on the Front Page screen on the control panel.
The control panel asks you to confirm that you want to uncap the printheads.
2. Press the ► (Proceed) key to uncap the printheads.
The control panel prompts you to disengage the capping station pad.
3. Disengage the capping station.
Have a paper towel ready to blot any cleaning fluid that has escaped from the printheads during capping. If the capping film was applied as directed, most of the fluid should run off the capping film into the drip tray.

Grasp the two capping pad levers, and simultaneously push them toward the back of the printer to lower the capping station.
4. Remove and discard the capping film.
Carefully remove the wrap to avoid spilling ink on the floor or yourself.
5. To access the heads for cleaning, remove the capping station assembly by pulling it forward and out of the printer.

6. Wipe the printheads with SolaChrome-HR Cleaning Solvent, using a 100% polyester Class 100 cleanroom wipe. **DO NOT USE ISOPROPYL ALCOHOL ON THE PRINTHEADS.**
Remove ink buildup on the printheads and lower surfaces of the carriage.
7. Replace the capping station assembly by aligning it with and pushing it into its tracks in the printer.
The capping station assembly is “keyed” so that it can be inserted all the way in the correct orientation. If you cannot push the capping station all the way into place, turn it around and try installing it again.
8. Press the  (Proceed) key.
The printhead carriage moves quickly to the right end of the printer, to the service station.
9. Press the  (Proceed) key.
The control panel displays the Front Page screen.
10. Print the prime bars.
See “Print Prime Bars” on page 3-8 for instructions. After the printheads have been capped, the prime bars will reveal several missing jets.
11. Purge the printheads.
See “Purge-n-Wipe Printheads” on page 3-8 for instructions.
12. Repeat steps 10 through 13 until no unreplaced missing jets are revealed by the prime bars.
13. Run AutoJet or Manual Jet Mapping.
See page 3-9 for instructions.

Loading Roll-Fed Media

The printer includes a tensioned supply and takeup system designed to handle vinyl and other heavier media on three-inch cores. The media handling system automatically detects the size of the supply and takeup rolls and provides consistent tension as the rolls change size during printing.

With the corresponding collets, media on 2-inch cores can be loaded onto the supply, but only 3-inch collets can be used on the takeup.



Tip Wear cotton gloves when loading media, or handle the media only by its very outside edges. This will prevent skin oils from being deposited on the media, which could be visible on printed output.

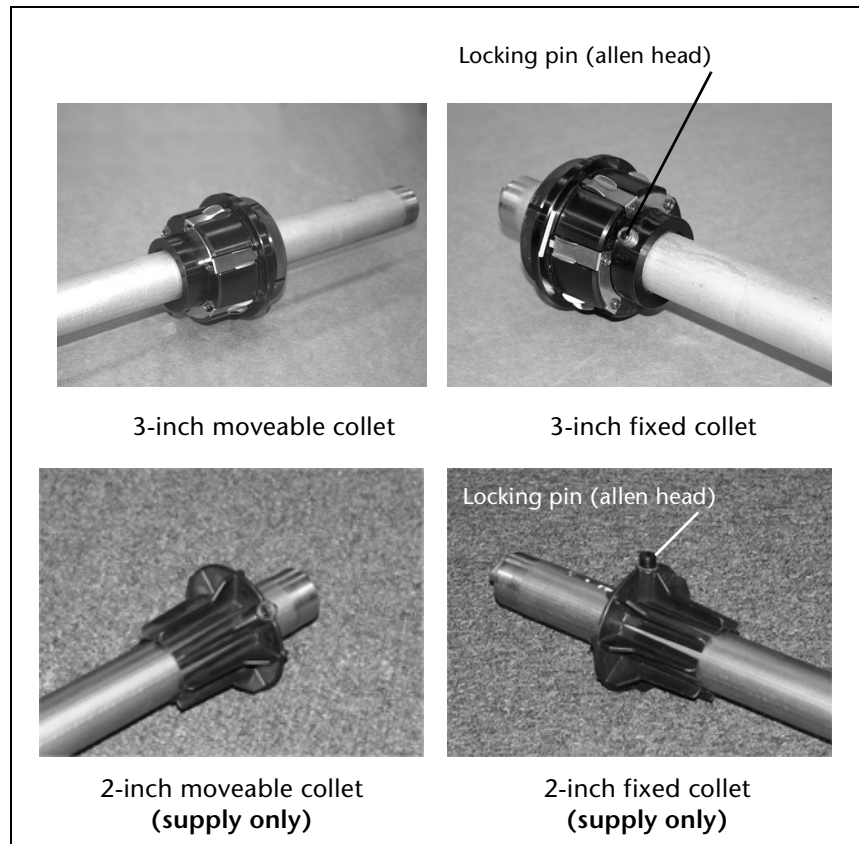


Fig. 3-4. 3-inch and 2-inch collets

Support for Large Narrow Media Rolls

For printing with large rolls of narrow media (less than 72 inches wide), the printer includes spool support accessories to prevent the spools from bowing under the weight:

- ◆ Spool support – attaches to the stand crossbar, supports the supply and takeup spools.

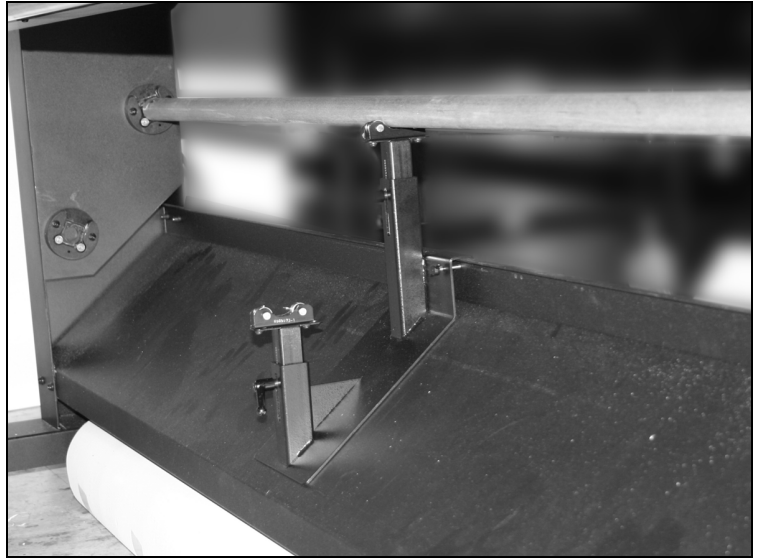


Fig. 3-5. Spool support

- ◆ Spool sleeve – slides over the spool with locking collets.



Fig. 3-6. Spool sleeve

1. Ensure that the fixed collet is properly located with the screw tightened into the inner hole on the supply spool (using the outer hole would prevent the spool from being installed).

The side of the spool with the fixed collet is the “home” side, closest to the printer’s electronics box.

2. Remove the moveable collet from the spool.



Note The 3-inch collets have *left-handed* threads that self-tighten during printing. Turn the locking ring clockwise to *loosen*, and counterclockwise to *tighten*.

3. Optionally, if using large rolls of narrower media, install the spool support and/or sleeve (see Fig. 3-5 and Fig. 3-6).
4. Load the media roll onto the spool.
5. Load and secure the moveable collet against the end of the media roll.

The moveable collet does not have a metal pin. Push the collet into the media core, and (on 3-inch collets) turn the locking ring counterclockwise to secure it in place.

6. From the rear of the printer, load the media and spool into the printer’s supply spool holder.

Press the home side of the supply spool into the home side holder (on the left from the rear of the printer), then swing the far side of the supply spool into the far side holder (on the right).

You can load the supply spool so that the media either unspools from the bottom or the top of the roll (see Fig. 3-7

below). This enables you to print on either side of the media.

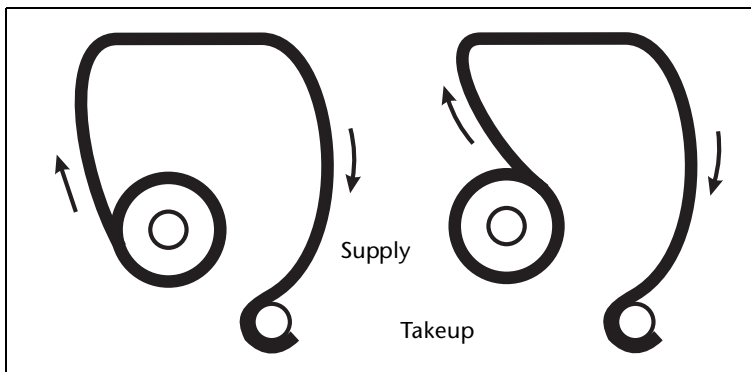


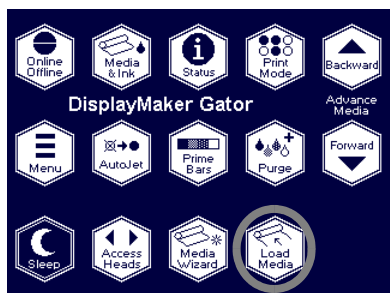
Fig. 3-7. Media path from supply to takeup

7. Ensure that the media is rolled onto the supply spool evenly, without “telescoping” to one side.
8. Release the pinch rollers so that media can be fed through them freely.
9. Feed the media through the pinch rollers and onto the platen.
10. From the front of the printer, pull the media web taut so that the media feeds in a straight line from the supply, with no wrinkles.

This is easier with two persons. If loading with one person, first lower the pinch rollers, walk around to the front of the printer, release the pinch rollers, then straighten the media.

11. Lower the pinch rollers onto the media.
12. On the Front Page screen of the control panel, press the Load Media key.

The control panel presents a list of media types. You can select a ColorSpan media from the list, or select Custom (at the end of the list) to specify a new media. The printer’s Media Wizard feature stores a set of parameters for each media type, which can be recalled and applied whenever you change media types. (See “Media Wizard” on page 3-44 for details.)



13. Select the media type that most closely matches the media you are loading, or create a new media type.

The control panel displays the current settings for the media type you chose.

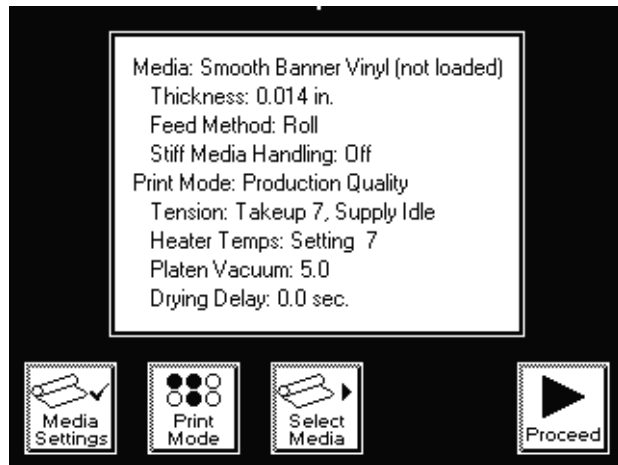


Fig. 3-8. Media settings

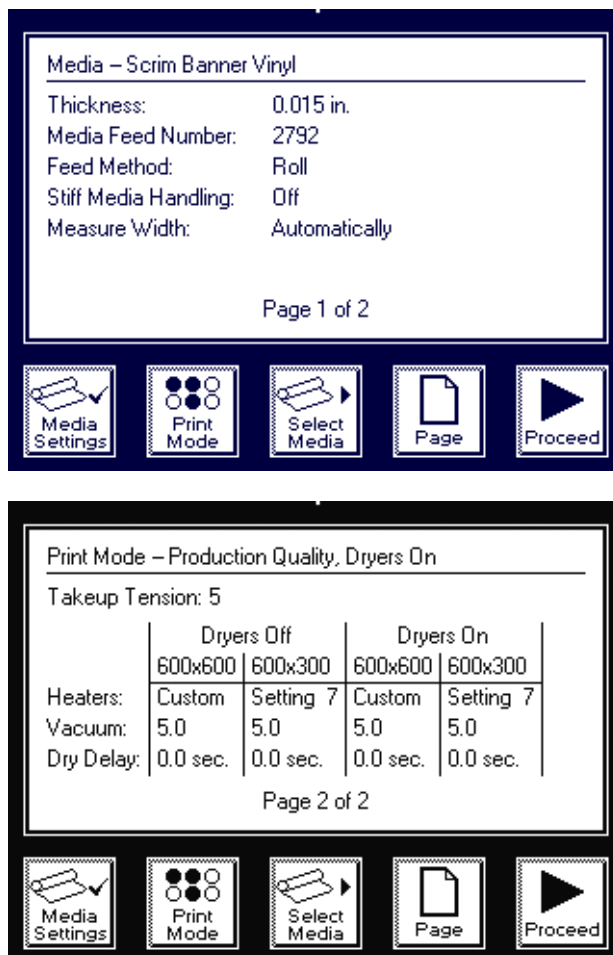




Fig. 3-9. Media settings (roll-fed)

14. Press one of the change keys to change any of the settings, print mode, or media type, press the  key to see page 2, or press the  key to continue.
 - ◆ If you do not have the optional auxiliary dryer enabled, page 2 will only show the “Dryers Off” column.
 - ◆ If you press one of the change keys, a screen appears to allow you to change any of the settings. Then press the

▶ key to continue. See “Media Wizard” on page 3-44 for information about these settings.

- ◆ If you press ▶, the control panel displays the prompt:
Advance media to takeup?

15. To advance the media, press ✓ (Yes), otherwise press ✕ (No) and go to the next step.

- ◆ If you press ✓ (Yes), the media advances to the takeup spool. You can press **Stop** if necessary to stop the media advance at any time.
- ◆ If you press ✕ (No), go to step 18.

16. Grasp the middle of the media web, pull straight back, route the media underneath the takeup core, and tape it to the takeup core as shown in Fig. 3-7 on page 3-19.

If necessary, you can use the arrow keys on the control panel screen to move the media forward or backward.



Note

With the fixed collets securely pinned to the supply and takeup spools (see Fig. 3-4), position the media on the takeup core in the same relative position as it is wound on the supply core. For example, if the media is positioned 0.125 inches from the left end of the supply core, it should be positioned the same distance from the left end of the takeup core. If necessary, the 3-inch collets on the takeup spool can be loosened so that the core can be moved to the right or left.

17. Press the ▶ key to continue.

The printer tensions the supply and takeup system, turns on the platen vacuum fans, and measures the width of the media by locating the right and left edges with the digital image sensor (camera) on the printhead carriage.

The control panel displays a numeric keypad.

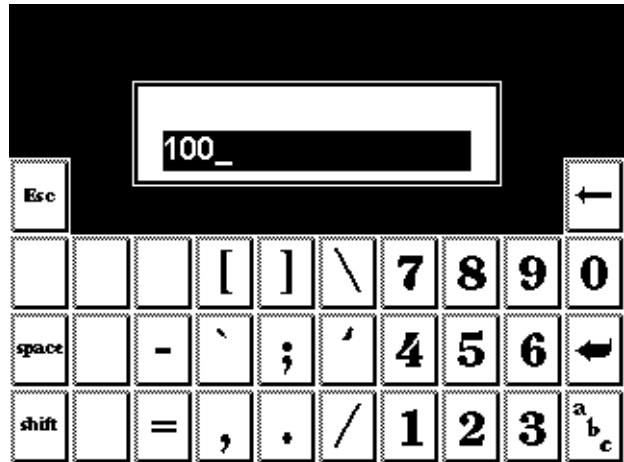


Fig. 3-10. Numeric entry screen

18. Enter the length of the media roll (if it is a new roll) or the length remaining (if it is a partially used roll), and press the Enter key to continue.

To skip this step, press **Esc** or **Enter** without entering a value. The printer will use a value of “undefined,” and will not track media usage.

The control panel displays the Media Feed Number.

19. Accept the displayed Media Feed Number, enter a new number, or perform a Media Feed Calibration to generate a new Media Feed Number (see “Media Feed” on page 4-6 for instructions).

You are now ready to begin printing.

Loading Wide Media

A roll of 72-inch and wider media is impossible to load it by grasping its left and right edges at the same time. Follow this procedure to more easily load wider media.



Tip Wear cotton gloves when loading media, or handle the media only by its very outside edges. This will prevent skin oils from being deposited on the media, which could be visible on printed output.

1. With one hand, grasp the media at the center of its leading edge, and pull it forward into the center grit rollers.
2. While continuing to hold the center of the leading edge of the media in place, grasp the left edge of the media with your left hand.
3. Pull the left edge of the media into the leftmost grit rollers.
4. Hold the media in place with your left hand.
5. Grasp the right edge of the media with your right hand, and pull it into the rightmost grit rollers.
6. With both hands, feed the media web evenly into all grit rollers.
7. With your right hand, hold the media spool at the collet to prevent the spool from moving.
8. With your left hand, press the Media Advance button for 2-3 seconds. The grit rollers will spin beneath the stationary media, thus equalizing the tension on the roll.
9. Press the Media Advance button to finish loading the media.
10. Verify that the media web is even and unwrinkled across its width.
11. When loading the media onto the takeup spool, ensure that the media is tightly wound onto the spool across its width.
12. Return to step 12 on page 3-19 to finish loading the media.

Unloading and Cutting Roll-Fed Media

1. Press the ▼ key on the Front Page screen to advance the printed portion of the media past the postheater.
2. On the Front Page screen of the control panel, press the **Unload** key.
3. The control panel prompts you to press ► to unload media, or ✕ to cancel.
4. Press ► to continue.

This detensions the supply and takeup spools.

5. Cut through the media with a utility knife along the cutting channel in the platen or below the postheater.

As you cut the media from the printer, hold it to prevent it from falling to the floor and possibly damaging it.



Note If you scratch the platen while cutting media, be sure to buff them out with a fine grade of sandpaper. Scratches in the platen can cause media feed inconsistencies, which can lead to head strikes and artifacts in printed output.

6. Take the single print or the entire takeup spool with printed output to your finishing area, and re-load the takeup system.
 - ◆ To re-load the takeup, from the menu, press the **Load** key on the control panel.

Takeup Spool Pin Release

To quickly unspool a large amount of media from the takeup without damaging the takeup tension spring, you must first disengage the spool from the takeup system.

The spool is normally engaged to the takeup motor with a tab at the end of the spool. To disengage this tab, press the **Unload** key to detension the supply & takeup system, then insert the takeup spool pin release tool (supplied, part number 0504334) between the spool and the bracket that holds the spool. This allows the spool to spin independently from the takeup as you pull media from it. When you are ready to begin printing, remove the pin release tool and press the **Load** key on the control panel.

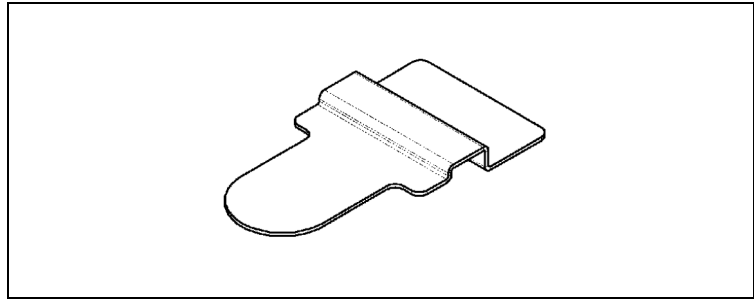


Fig. 3-11. Takeup spool pin release tool



Tip Alternatively, you can disengage the takeup spool pin by installing the spool “backwards,” with the pin pointing away from the takeup motor.



Tip You can reduce the back tension of the media supply motor by installing the takeup spool pin release tool and disabling the supply-out detection feature (**Menu > Printer Settings > Supply Out Detection**). You may want to do this if back tension is causing the media to buckle or causing other media feed problems.

Respooling Media

The printer can respool media from one cardboard core to another. You may want to do this if:

- ◆ The media was not taped to its core by the media vendor, which makes tensioning impossible.
- ◆ You want to change the direction that the media unwinds from the core (printed side out vs. printed side in).

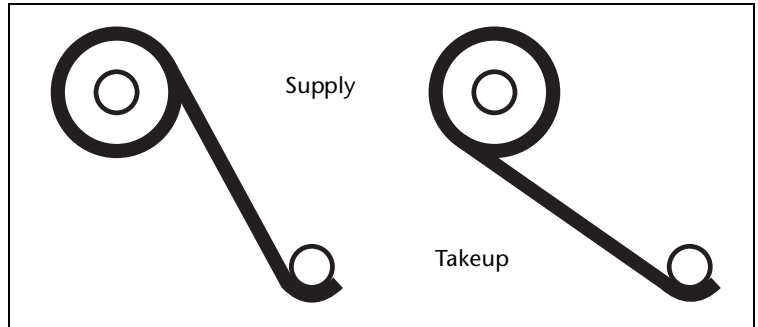







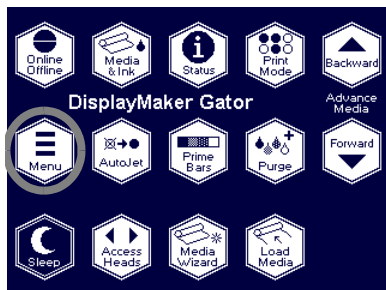
Fig. 3-12. Respooling load options

1. Load media on the supply.
2. Load an empty cardboard core on the takeup.
3. Slowly pull media from the supply spool to the takeup.

Do not pull the media faster than the supply motor releases it. Route the media directly to the takeup. Do not route it over the platen and heaters.

Ensure that the right and left edges of the media web are perpendicular to the sides of the printer, that the tension appears uniform across the media web, and that the media is not unrolling unevenly (“telescoping”) from the supply spool.

4. Tape the end of the media to the takeup core.
5. Press the  (Menu) key from the Front Page screen on the control panel to display the menus.
6. From the control panel menu, press the  key to highlight **Maintenance**.
7. Press the  (Menu In) key.
8. From the Maintenance menu, press the  key to highlight **Respool Media**.
9. Press the  (Menu In) key.



10. Press the ► (Proceed) key to respool the media.

The media is pulled from the supply spool onto the takeup spool. When the printer detects the end of the media, the respool function stops automatically.

Loading Rigid Media



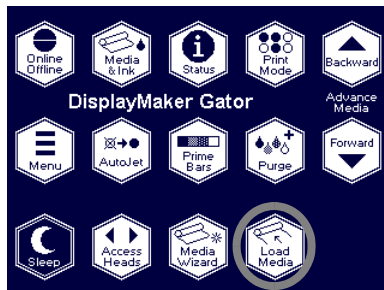
The printer has two media load states:

- ◆ **Unloaded** – the printer is ready to accept either roll-fed or rigid cut-sheet media
- ◆ **Loaded** – the Media Wizard has stored parameters for the currently-loaded cut-sheet media, allowing you to reload multiple cut sheets without reentering the Media Wizard

Tip If you are printing multiple copies of the same image on rigid cut-sheet media, you can skip much of the load process by using the Reload Media function for the second and subsequent prints. See “Reloading Rigid Media” on page 3-36 for details.

For optimal results when printing on rigid cut-sheet media:

- ◆ Ensure that the printer has been correctly assembled and leveled, and operates on a flat, stable floor.
- ◆ Ensure that the media input and output tables have been correctly assembled, are level left-to-right, and are at the same height as the printer platen.
- ◆ Use only flat, unwarped or damaged sheets, with parallel opposite edges and 90° corners.



1. On the Front Page screen of the control panel, press the **Load Media** key.

The control panel presents a list of media types. You can select a ColorSpan media from the list, or select Custom (at the end of the list) to specify a new media. The printer’s Media Wizard feature stores a set of parameters for each media type, which can be recalled and applied whenever you change media types. (See “Media Wizard” on page 3-44 for details.)

2. Select the media type that most closely matches the media you are loading, or create a new media type.

The control panel displays the current settings for the media type you choose.



Fig. 3-13. Media settings

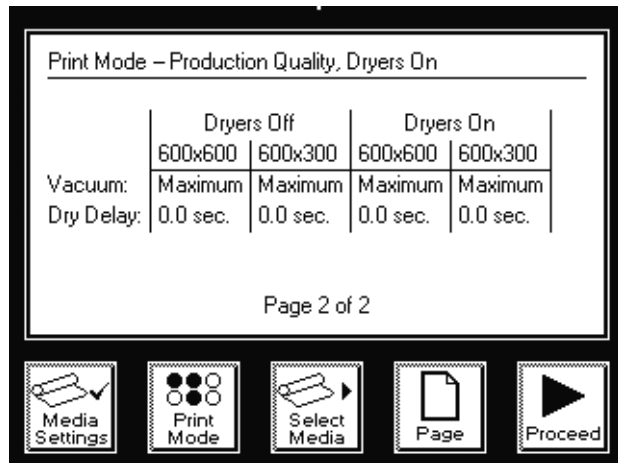






Fig. 3-14. Media settings (cut-sheet rigid)

3. Press one of the change keys to change any of the settings, print mode, or media type, press the  key to see page 2, or press the  key to continue.
 - ◆ If you do not have the optional auxiliary dryers enabled, page 2 will only show the “Dryers Off” column.
 - ◆ If you press one of the change keys, a screen appears to allow you to change any of the settings. Then press the  key to continue. See “Media Wizard” on page 3-44 for information about these settings.

If you press , the control panel displays a numeric keypad so you can enter the length of the media.

4. Enter the length of the media.

The printer will use the value you enter here for subsequent calculations, so be as accurate as possible.

5. Press the ► key.

The control panel displays the prompt:

Load a sheet of media onto the printer

6. Unload any roll-fed media from the printer.
7. Insert the pins of the media alignment tool into two platen vacuum holes (in the same row).

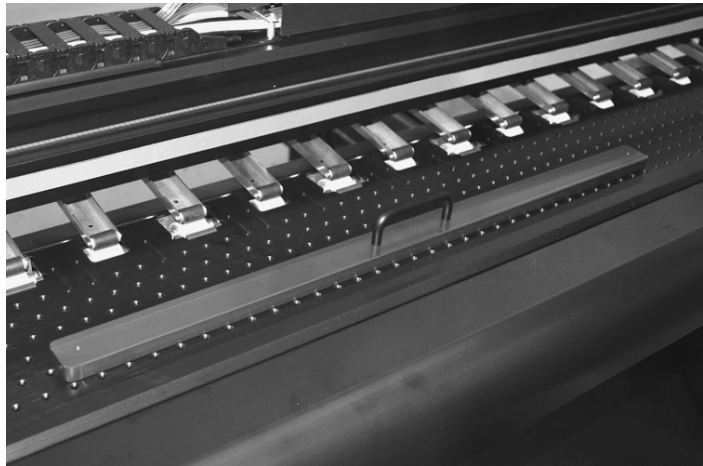


Fig. 3-15. Media alignment tool

8. Release the pinch rollers.
9. Slide a sheet of media onto the platen and center it on the pinch rollers.

It is not necessary to align the media to the left or right edge of the platen. If possible, avoid positioning the left or right edge of the media under a pinch roller. If this is unavoidable, see “Releasing a Pinch Roller,” on the next page.

Releasing a Pinch Roller

Follow these steps to raise a single pinch roller if the edge of the media must be located under the roller, or if the roller is unusable:

- ◆ Raise the pinch rollers using the release lever.
- ◆ Install the release block from the front of the printer into the desired pinch roller assembly.
- ◆ One of the block's two indents should rest on the pivot. Push the block back to the second indent to engage the back of the rail as shown below.
- ◆ Lower the rollers to the desired tension.
- ◆ The block can be stored in the disengaged position by raising the pinch rollers, then pulling the block forward so that its first indent rests in the pivot.

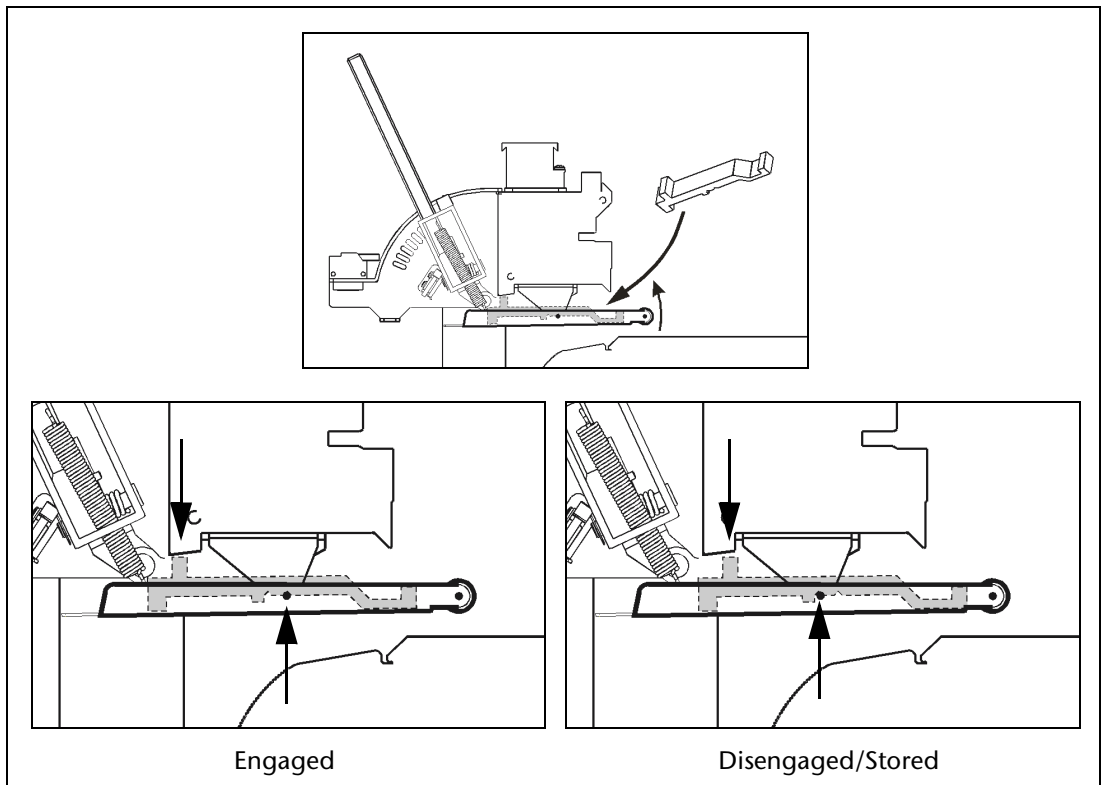


Fig. 3-16. Using the pinch roller release block

10. Push the media up against the media alignment tool.

Make sure that the media is centered under the pinch rollers. Avoid positioning either the left or right edge of the media under a pinch roller. The printer will automatically locate the left and right edges.



Note

If the media is not square (opposite edges parallel with 90 degree corners), you can align it with the fence on the input (rear) table. First, ensure that the fence is exactly perpendicular with (at 90 degrees to) the platen with a large framing (carpenter's) square and the media alignment tool.

11. Set the pinch rollers as specified in the Media Wizard.
12. Remove the media alignment tool from the platen.
13. Press the ► key to continue.

The control panel asks whether you want to adjust the head height. If the thickness of the media you are loading is significantly different from the previously loaded media, then adjust the head height for optimal print quality and to prevent the carriage from striking the media.

- ◆ If you press **Yes**, the control panel enters the head height, service station height, and bidi calibration procedures. (See Chapters 4 and 5 for instructions.)
- ◆ If you press **No**, the media load procedure continues.

The printhead carriage moves out of the service station and uses the onboard digital imaging sensor (“camera”) to locate the right, front, and left edges of the media, and to determine whether the sheet was loaded squarely into the printer.

14. If the media is skewed, the control panel asks whether you want to adjust it.
 - ◆ If you press **Yes**, you can release the pinch rollers, adjust the media, lower the pinch rollers, and press the Proceed key to continue.
 - ◆ If you press **No**, the media load procedure continues.

The control panel briefly displays the measured width of the media.

15. Press the  key to continue.

The control panel displays a screen that shows the following information:

- ◆ Media size
- ◆ Print area
- ◆ Right & left margins — if you enter 0 (zero), you can also specify an amount of overprint (printing past the edge of the media). This enables you to achieve an edge-to-edge printing effect without an unprinted border, especially if the media is skewed or not a perfect rectangle. Protect the platen with tape or a strip of media to catch the overprinted ink.
- ◆ Leading margin
- ◆ Trailing margin — 6.50 inches (165 mm) minimum to allow the pinch rollers to feed the media. If you set the Trailing Margin to 0 and want to print to the trailing edge, you must attach a trailer of the same media to the trailing edge so the pinch rollers can feed the media all the way past the print zone.



Tip For tips on printing edge-to-edge, see “Edge-to-Edge Printing” on page 3-38.

16. To change the margin settings, press the **Margin Settings** key; otherwise, press **Proceed**.

The printer moves the media to the proper position for printing.

17. Press the **Online** key to receive a print job from the print server or RIP.

After a print job has finished printing, the media is automatically advanced (ejected) from the pinch rollers.



Note Before a print job is received, you can unload the media at any time by pressing the **Unload** key on the Front Page screen of the control panel.

Reloading Rigid Media

After printing the first copy of a multiple copy job onto a sheet of rigid media, the Front Page screen displays a special **Load/Reload** key.

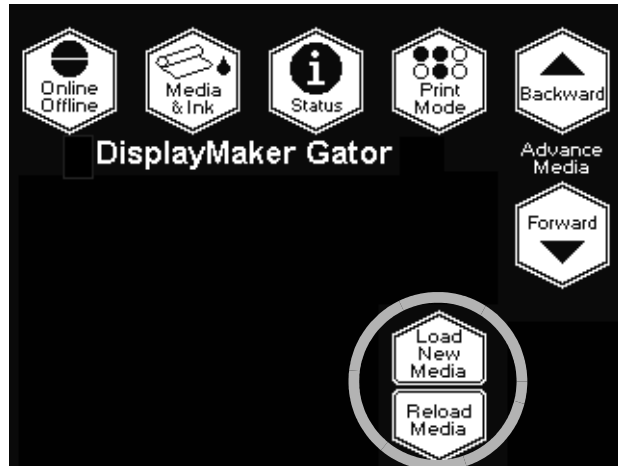


Fig. 3-17. Load/Reload key

- ◆ **Load New Media** — press this key to re-enter the Media Wizard and select a new media to load (either roll-fed or rigid cut-sheet). See “Loading Roll-Fed Media” on page 3-16 or “Loading Rigid Media” on page 3-29 for instructions.
- ◆ **Reload Media** — press this key to re-load the same media type, for example to print multiple copies of an image on the same media.

When you press the Reload Media key, the control panel displays this screen:

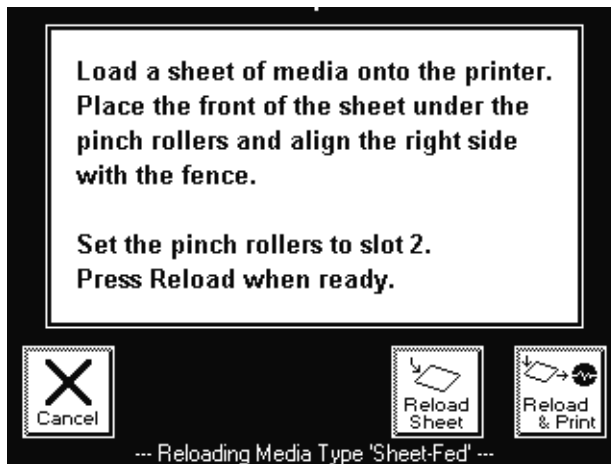


Fig. 3-18. Reload media

See “Loading Rigid Media” on page 3-29 for instructions. Then press one of the following keys:

- ◆ **Reload & Print** — the printer locates the edges of the media as specified in Measure Media Type (see “Printer Settings” on page 2-10), then switches online and receives the next print job.
- ◆ **Reload Sheet** — the printer locates the edges of the media as specified in Measure Media Type (see “Printer Settings” on page 2-10), then displays the Front Page screen so you can print Prime Bars or make adjustments. When you are ready to print, press the Online Offline key to switch the printer online.

Edge-to-Edge Printing

The printer can print up to or past the edges of rigid media. This provides the look of a “full-bleed” print without trimming the media. For best results, follow these guidelines.



Tip MacDermid ColorSpan has developed an extensive set of tips and techniques for printing on rigid media, including edge-to-edge and double-sided printing. See the MacDermid ColorSpan web site, or Contact Technical Services at (800) 925-0563 or (952) 944-4040, and ask for Tech Note #2730, “Straight-Through Paper Path: A Handbook for Users.”

Document, Application, and RIP Settings

- ◆ To ensure that the printer will print past the edges of the media, design or enlarge the job slightly larger than the media. For example, if the media is 32 inches wide, set an Overprint distance of 0.125 inches (see **Menu > Printer Settings > Margin Settings**) and size the document to 32.25 inches wide.
- ◆ For images with a special detail at the edge of the page, such as a border, make the border line thicker than usual to extend past the edges of the page.

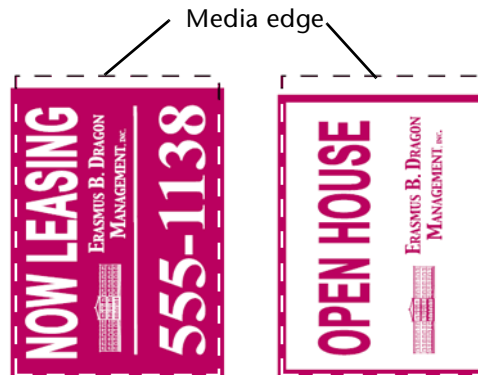


Fig. 3-19. Laying out a full-bleed document (shown with bleeds off three sides)

Media Properties

- ◆ Follow the guidelines in this chapter for printing on rigid media.
- ◆ The media should have parallel opposite edges with 90-degree corners. Media that is not exactly square with itself can be used, but will require extra attention when loading (see “Loading and Squaring the Media,” below).
- ◆ To print to the trailing edge, attach a 6.5 inch (16.5 cm) or longer trailer of the same media to the trailing edge, so the pinch rollers can feed the media all the way past the print zone.

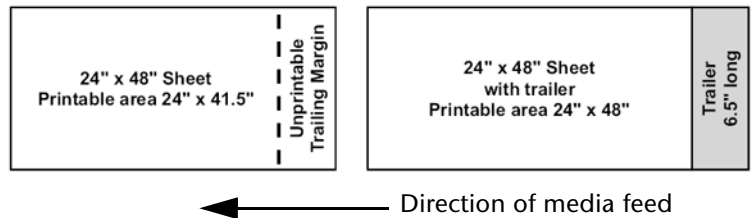


Fig. 3-20. Attaching a trailer

Printer Setup

- ◆ Tape the platen under the left and right edges of the media to catch any oversprayed ink. Use a colored tape to allow the printer to find the media edges. A piece of media printed with a solid color also works for this purpose. Do not use white tape or media; the printer uses the contrast between the media and the platen to find the media edges.
- ◆ Use the supplied head height gauge to set the printhead height over the media.
- ◆ From **Menu > Printer Settings > Margin Settings**, set the Right and Left Margin, and Leading Margin to 0 as desired. Set the Trailing Margin to 6.5 inches (which is the minimum).
- ◆ Optionally, you can set an Overprint distance between 0 and 0.5 inches to print past the left and right edges (0.125 inches to 0.25 inches is usually sufficient if the media is reasonably square and unskewed).
- ◆ From **Menu > Printer Settings > Print Position**, center the image on the media.
- ◆ When loading the media, report the length as the total length of the media plus trailer.

- ◆ Under **Menu > Printer Settings > Media Measure Type**, choose **Maximal** for greatest precision and skew detection when printing edge-to-edge. It measures the width of the media in two places, and finds the front edge in two places to estimate skew and detect non-rectangular sheets. The printer will report if the media appears to be skewed and therefore will not feed straight through the print zone. If the media is not actually skewed, one or more of its edges may not be parallel to each other.

Loading and Squaring the Media

- ◆ Load the media as described in “Loading Rigid Media,” earlier in this chapter.
- ◆ If the printer discovers that the media is skewed, you can reposition most media without releasing the pinch rollers by nudging the trailing edge right or left to correct the skew.

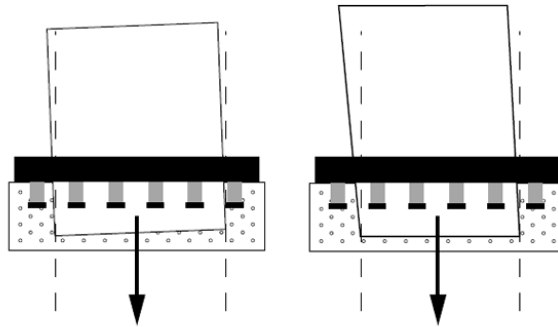


Fig. 3-21. Skewed (left) and non-square (right) sheets

- ◆ If the printer reports that the media is skewed, but you cannot correct the skew, the sheet may not be perfectly square (90-degree corners with parallel sides). In this case, ensure that the right edge of the media (closest to the control panel) is parallel to the direction of media feed. (You can use the fence on the input (rear) table as a guide after squaring it to the platen.) Then use the procedures described previously to ensure enough overprinting to account for the shape of the sheet. If insufficient overprinting occurs, the sheet may need to be trimmed for a bleed effect.

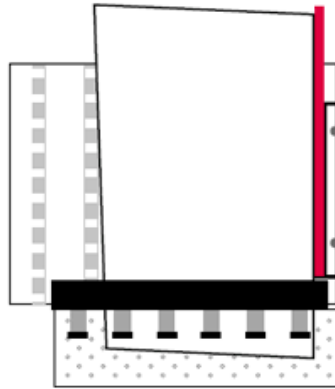


Fig. 3-22. Feeding a non-square sheet

Example Document Design

- ◆ Media size: 48x96 inches (4x8 feet)
- ◆ Bleeds: Full bleed
- ◆ Document size in application software: 48.5 inches x 96.0 inches, to include an overprint of 0.25 inches on the left and right edges (the printer will not overprint the leading edge, to avoid feeding the media over wet ink on the platen)

Media Properties

- ◆ The operator selects a flat sheet of 4x8-foot media with opposite sides parallel and all four corners at 90 degree angles.
- ◆ The operator attaches a trailer that is 6.5 inches (16.5 cm) long and 48 inches wide to the trailing edge of the media, applying the adhesive tape to the back side.

Printer Setup

- ◆ The operator applies colored masking tape to the platen where the right and left edges of the media will feed, to prevent overprinting onto the platen.
- ◆ The operator sets the head height over the media.
- ◆ The operator configures the following options on the printer control panel:
 - ◆ **Menu > Printer Settings > Margin Settings > Left & Right Margin:** 0 inches, Overprint Distance: 0.25 inches
 - ◆ **Menu > Printer Settings > Margin Settings > Leading Margin:** 0 inches
 - ◆ **Menu > Printer Settings > Margin Settings > Trailing Margin:** 6.5 inches
 - ◆ **Menu > Printer Settings > Print Position:** Center
 - ◆ **Menu > Printer Settings > Media Measure Type:** Maximal
 - ◆ **Media length (entered during Load Media):** 102.5 inches = 96.0 inch media length + 6.5 inch trailer

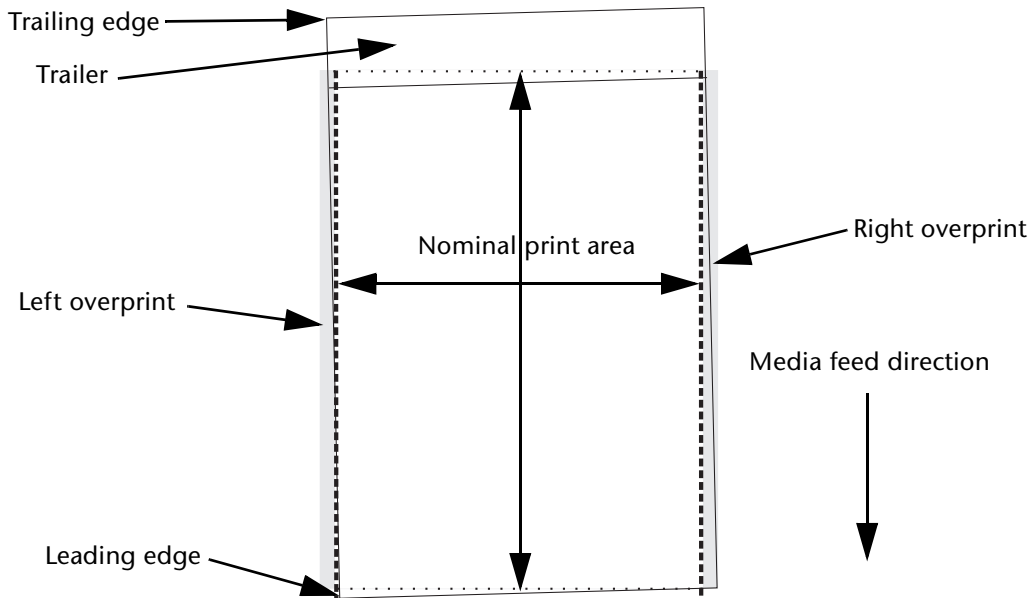


Fig. 3-23. Edge-to-edge printing terminology

- ◆ During **Load Media**, the printer locates two points on each of the leading, left, and right edges of the media. The printer uses these data points, and assumes 90-degree corners and parallel sides, to determine the skew of the media. If the media is skewed enough that an unprinted left or right edge may result, even with a margin of 0 and the amount of overprinting specified, the control panel displays a message with the skew amount:

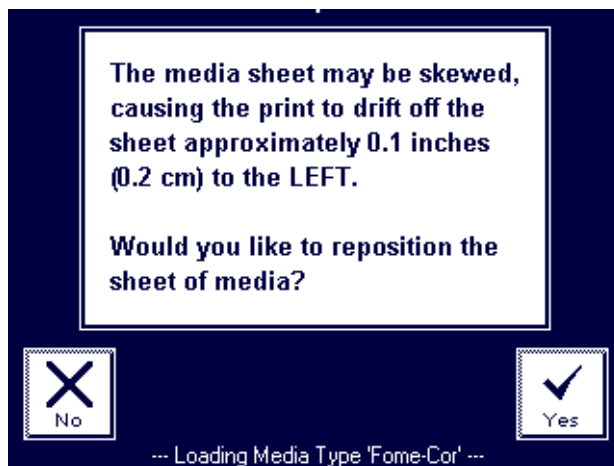


Fig. 3-24. Skew message

Correct the skew by nudging the trailing edge of the media by the distance left or right as reported by the control panel, without releasing the pinch rollers. Allow the printer to measure the media again. Repeat until the skew is within tolerance.



Note LEFT and RIGHT are defined as if facing the front of the printer: RIGHT is toward the control panel, LEFT is toward the opposite end.



Tip If you set the overprint distance to a smaller number, there will be less skew tolerance before the printer reports too much skew. If you set a larger overprint distance, the printer will permit a greater amount of media skew before displaying the error message.

Media Wizard

The Media Wizard software feature stores a set of printing parameters by media type, enabling you to instantly optimize the printer whenever you change media. The Media Wizard includes standard sets of parameters for popular media types, and allows you to define new settings for media types you define.

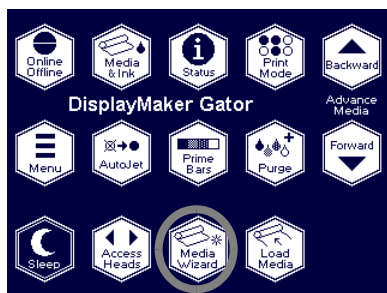
The Media Wizard can store a different set of settings for each of the print modes (Billboard, Production, High), or use the same settings for all three modes.

The Media Wizard is accessible during the media load process (see “Loading Roll-Fed Media” on page 3-16) and from the Front Page screen (as follows).



Tip


To use the Media Wizard most efficiently, start by using one of the standard media types. If you are not using a standard media type, select the standard media type that most closely matches the media you are using. Then only if necessary, create a new media type using the standard type you selected as a starting point, and adjust it as needed.



1. From the Front Page screen, press the **Media Wizard** key.

The Media Wizard menu appears. It contains the following options:

- ◆ **Media Settings** — displays the settings currently stored in the Media Wizard
 - ◆ **Create Media Type** — creates a new media type using settings you specify
 - ◆ **Delete Media Type** — deletes a user-created media type
 - ◆ **View Media Types** — allows you to view each of the media types stored in the Media Wizard
 - ◆ **Set Sort Method** — allows you to sort the list of media names Alphabetically, by Most Used, Recently Used, Sheet-fed First, Roll-fed First, or None (preserves the current order).
2. When you select **Media Settings**, the control panel displays the current settings.
 - ◆ To change the current settings, press the **Media Settings** key.

- ◆ To return to the Media Wizard menu, press the  (Proceed) key.

For each media type, the Media Wizard stores the following settings. The settings stored vary depending on whether the media is roll-fed or cut-sheet.

- ◆ **Name** — for user-defined media, use the alphabetic keyboard displayed on the control panel to enter the media name. (Standard media names cannot be changed.)
- ◆ **Thickness** — for user-defined media, use the numeric keyboard displayed on the control panel to enter the media thickness (caliper). (Standard media thickness cannot be changed.) Thickness is used for reference only, so this can be left blank for custom media.
- ◆ **Media Feed Method** — Roll or Cut Sheet.
- ◆ **Stiff Media Handling (roll-fed)** — when enabled, detensions then retensions the takeup system before every print job, for more accurate feeding of adhesive-backed and other stiffer roll-fed media types.
- ◆ **Pinch Rollers (cut sheet)** — adjustable pinch roller setting, from 1 (lowest force) to 8 (highest force). Select the lowest pressure that results in good media advance without leaving pinch roller marks on the media.
- ◆ **Media Out Sensor (cut sheet)** — detects when rigid cut sheet media is out. Normally enabled; disable only if the sensor is malfunctioning.
- ◆ **Measure Media Width** — select whether to have the printer measure the media width automatically (works for most media) or manually by the operator (only necessary for clear media that cannot be detected with the printer's image sensor). In the latter case, the control panel prompts the user through the process.
- ◆ **Takeup Tension (roll fed)** — select a tension setting from 1 (low) to 5 (high), or select 0 for idle (no tension).

Takeup tension is used to ensure that the media web feeds straight from supply and takeup, and lies flat on the platen. Use the lowest tension settings that allow correct media feed.

When the takeup tension is set to idle, printed output is not automatically wound onto the takeup spool. In this mode, however, a key appears on the control panel that enables you to wind the takeup spool manually. If the end of the media is taped to the takeup core, you can

use this key to control how tightly the media is wound onto the core.

- ◆ **Supply Out Detection (roll fed)** — for roll-fed media, the printer usually monitors the supply spool to detect when it runs out of media. You can use this menu option to disable media out detection when you install the takeup spool pin release tool (part number 0504334, see “Takeup Spool Pin Release” on page 3-26 for instructions) for printing rather than to freely pull media from the supply.

- ◆ **Heater Temp Settings (roll fed)** — select a postheater setting from 0 to 10, or Custom to specify custom settings. Setting 0 sets all heaters to 85° F (30° C).

The preheater and platen heater maintain uniform surface temperature across the printing area to control dot gain on various media. The postheater dries prints before being rolled onto the take-up spool. If prints are not drying, increase the postheater temperature; if media is deforming or sticking to the postheater, lower or turn off the postheater.

- ◆ **Platen Vacuum Control** — this option turns on the vacuum fans, and displays ▲ and ▼ keys on the control panel. Press ▲ and ▼ to raise or lower the fan speed, and observe the media as the fan speed changes. If the media is lifting off the platen, increase the fan speed. If the media is sticking to the platen, decrease the fan speed.
- ◆ **Drying Delay** — press the ▲ and ▼ keys on the control panel to increase or decrease the drying delay (seconds per print swath). To increase throughput, decrease the drying delay. If prints are not drying, increase the drying delay.

3. When you select **Create Media Type**, the Media Wizard displays a series of screens that enable you to enter each of the Media Wizard settings.

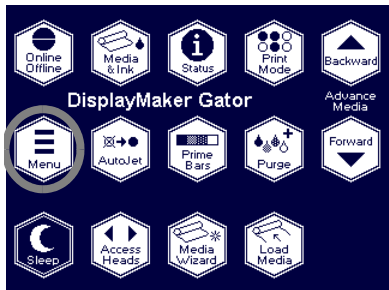
The current settings as shown on the Media Settings screen are used as default values. Change the defaults to suit the new media for each print mode.






4. When you select **Delete Media Type**, the Media Wizard shows a list of currently defined media. You can delete any user-defined media type.
5. When you select **View Media Types**, the Media Wizard allows you to browse through the settings for each of the media types and print modes.

Setting Heater Temperatures


There are three heaters: a preheater, a platen heater, and a post-heater. The postheater's top and bottom zones can be set to different temperatures. Optionally, the postheater can be turned off.

The heater temperatures can be set during the media load process (see "Loading Roll-Fed Media" on page 3-16), from the Media Wizard (see "Media Wizard" on page 3-44), or from the menu (see the following procedure).





1. From the control panel Front Page screen, press the  (Menu) key.
2. Press the  key repeatedly to highlight **Printer Settings**.
3. Press the  (Menu In) key.
4. Press the  key repeatedly to highlight **Heater Temps Setting**.
5. Press the  (Menu In) key.

The control panel displays a list of heater settings, numbered from 0 to 10 and "Custom."

6. Press the  or  keys repeatedly to select a setting.

As you scroll through the settings, the temperature settings for each zone are shown at the bottom of the screen.

7. Press  to select a setting, or  to cancel.
 - ◆ If you selected Custom, a list of heaters appears so you can change the settings for each of the heater zones.
 - ◆ If you selected any other setting, go to step 9.
8. Select a heater zone and set a new temperature.

If a Media Wizard type is currently loaded, the control panel asks whether to save the new setting in the Media Wizard for the currently loaded media.

9. Press ✓ to save the new settings in the Media Wizard, or ✗ to not save them.

Settings can be saved only for user-defined media, not for factory-defined media. The settings will be applied whether or not you save them in the Media Wizard. If you do not save them, they will be lost when you load a different media type or restart the printer.

The control panel advises you that it may take several minutes for heaters to reach the new temperature settings.

CHAPTER 4

Calibrating the Printer

This chapter explains how to calibrate the printer for the best possible output:

- ◆ When to Calibrate (page 4-2)
- ◆ AutoJet (page 4-3)
- ◆ AutoTune (page 4-4)
- ◆ Media Feed (page 4-6)
- ◆ Manual Calibrations (page 4-8) — Manual BiDi Registration, Manual X Head Registration, Manual Jet Mapping, Jet Status Lines, Default Registration Data
- ◆ Auto Calibrations (page 4-20) — AutoBiDi Calibration, AutoH2H (Head-to-Head) Calibration, AutoJet Calibration, Full AutoSet
- ◆ Auto Calibrations (page 4-20)
- ◆ Straightening the Media Path (page 4-22)
- ◆ Image Sensor Calibration (page 4-23)
- ◆ Linearization (page 4-24)

When to Calibrate

The printer features several types of calibrations. Some should be run routinely, others only when necessary:

When to run	Calibration	Function
When Purge-n-Wipe does not recover all missing jets	AutoJet (page 4-3) or Manual Jet Mapping (page 4-13)	To identify and map out non-working jets.
When printing a large group of print jobs	AutoTune (page 4-4)	Automatic jet maintenance during extended printing periods
When loading a new media (but not when loading a new roll of the same media); after changing the head height	Media Feed or media feed adjustment during printing (page 4-6)	Media advance accuracy
	Auto Bidirectional (page 4-20) or Manual Bidirectional (page 4-11)	Head calibration, run Manual when calibrating transparent or other media that the onboard digital image sensor cannot calibrate
When loading a new media (but not when loading a new roll of the same media)	Color calibration (page 4-24 or third-party RIP manual)	Linearization of colors

AutoJet

AutoJet detects individual ink jets that are misfiring or not firing at all. During subsequent printing, the printer compensates for these jets by using other jets in their place, ensuring maximum print quality without reducing print speed.

You can also identify and map missing jets manually from the Manual Calibrations menu (see “Manual Jet Mapping” on page 4-13). You may want to manually map weak or misdirected jets that AutoJet does not detect and substitute.

To run AutoJet:

- ◆ Press the AutoJet button on the control panel Front Page screen (see page 2-4), or
- ◆ Select AutoJet Calibration from the Auto Calibrations menu (see “Auto Calibrations” on page 4-20), or
- ◆ Run AutoJet automatically with the AutoTune scheduler (see “Auto Calibrations” on page 4-20)





Note AutoJet does not work with transparent media, nor with many translucent media. In this case, run Manual Jet Mapping.



1. Press the **AutoJet** button from the Front Page screen or select AutoJet from the Auto Calibrations menu.

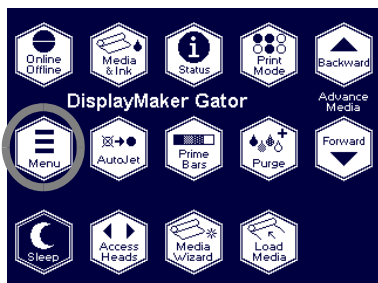
The printer asks whether you want the service station to perform a Purge-n-Wipe operation. By recovering clogged printheads, you reduce the number of jet substitutions required.

- ◆ Press  to initiate a Purge-n-Wipe. The printheads are purged, then wiped.
 - ◆ Press  to skip the Purge-n-Wipe.
2. The printer prints the AutoJet test pattern.
 3. The printer reads the AutoJet test pattern and maps any missing jets to available working jets.





The control panel shows the progress of this operation as the percentage completed.

4. The printer prints an AutoJet report.




AutoTune



AutoTune runs jet maintenance automatically at intervals you specify. You can use the Quality Check Mode feature to handle AutoJet errors, with or without user intervention.

1. On the Front Page screen, press the  (Menu) key to enter the menu system.
2. Press the  (Menu In) key display the **Calibrate Printer** menu.
3. Press the  key to highlight **AutoTune**.
4. Press the  (Menu In) key.

The control panel displays the AutoTune status (off or current interval).




5. Press  or  to set the AutoTune interval.
6. Press  (Proceed).

The control panel displays a list of services for AutoTune to run.

- ◆ Purge/Wipe
- ◆ Purge/Wipe & AutoJet
- ◆ AutoJet



Tip **Purge/Wipe** takes the least amount of time, **Purge/Wipe & AutoJet** takes the greatest amount of time. Select Purge/Wipe & AutoSet only if Purge/Wipe does not produce satisfactory results.

7. Select an AutoTune option to run.
8. Press the  key, then the  (Menu Out) key.
The control panel displays a confirmation message:
Setting completed.
9. Press the  (Menu Out) key repeatedly until the Front Page screen is displayed. Press the Online/Offline button to return the printer to the Ready state.

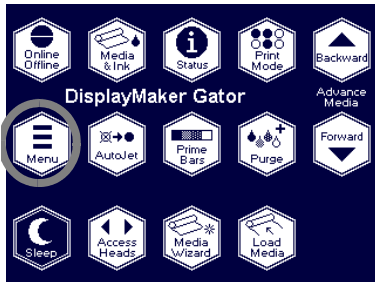


Note When AutoTune is enabled, the selected operations will be executed as scheduled regardless of whether you initiate them manually from the control panel.

Quality Check

When you run AutoJet manually, the software notifies you if there are any jet or alignment problems so that they can be addressed. When AutoTune runs AutoJet at scheduled intervals, you can use the Quality Check feature to handle AutoJet errors.

When Quality Check is enabled, if any missing jets are found that are not substituted by a working jet, the operator can be alerted by the control panel or the job can be routed to the Attention queue on the ColorSpan print server.



1. On the Front Page screen, press the **≡** (Menu) key to enter the menu system.
2. Press the **▼** key repeatedly to highlight **Printer Settings**.
3. Press the **↶** (Menu In) key display the **Printer Settings** menu.
4. Press the **▼** key repeatedly to highlight **Quality Check**.
5. Press **▶** (Proceed).

The control panel displays the Quality Check options.

- ◆ **Attended Mode** – user must press **▶** (Proceed) to acknowledge the error and print the job (if one is pending), or **✕** (Cancel) to cancel printing.
 - ◆ **Unattended Mode** – no user acknowledgment of errors is required. When a quality check fails, print jobs are sent to the ColorSpan print server’s Attention queue with a disposition of “Uncalibrated Printer” (this feature may not be supported by non-ColorSpan RIPs).
 - ◆ **OFF** – no quality check is performed, all jobs will print.
6. Select a Quality Check option.
 7. Press the **↷** (Menu Out) key repeatedly until the Front Page screen is displayed. Press the Online/Offline button to return the printer to the Ready state.

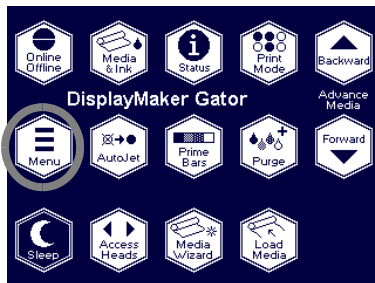
Media Feed





This calibration allows you to calibrate the accuracy of the media advance. Inaccurate media advance can result in blank spaces between print swaths (too much advance) or overlapping swaths (too little advance). The Media Wizard stores this value by media type, and displays a media feed number (MFN), which you can record for subsequent entry.

The media feed number enables you to quickly specify a known good media feed setting without recalibration. For example, you could keep a list of media feed numbers by media type, or by media type and full, half, and nearly empty supply rolls.



Tip You can also adjust the media advance while a print job is printing. Repeatedly press the increase advance or decrease advance button shown on the control panel to eliminate blank spaces or overlap between print swaths. When you do this, the media feed number displayed on the control panel changes accordingly.



1. Press the  (Menu) key from the Front Page screen on the control panel to display the menus.
2. Press the  (Menu In) key display the **Calibrate Printer** menu (highlighted by default).
3. Press the  (Menu In) key to select **Media Feed** (highlighted by default).
4. Press the  (Menu In) key to select an option.
 - ◆ **10-inch calibration** — prints a 10-inch test pattern so you can verify its length with an accurate metal ruler. This is not as precise as the 34-inch calibration, but it uses less media. Measure and adjust the media advance as needed until the pattern is exactly 10 inches long.



Tip To avoid cutting the 10-inch pattern from the media web, copy the marks from the 10-inch calibration to the long edge of a letter-size (or A4) sheet of paper. Then measure the transferred marks and adjust the media advance as needed until the marks are exactly 10 inches apart.

- ◆ **Input MFN** – enter the Media Feed Number that was displayed after a previous media feed calibration, to return to that setting without performing the calibration again.

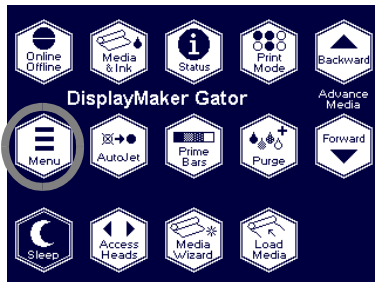
Manual Calibrations

When you run the calibrations from this menu, you evaluate the calibration test patterns visually and enter the calibration values via the control panel.



Note The manual BiDi and X head calibrations are time-consuming and can be error-prone, but is necessary when calibrating transparent media or other media that the printer's digital image sensor cannot calibrate.

Before calibrating the printer, first clean the printhead jets. See “Loading Roll-Fed Media” on page 3-16 for tips on detecting and recovering missing jets.



1. Press the (Menu) key from the Front Page screen on the control panel to display the menus.
2. Press the (Menu In) key display the **Calibrate Printer** menu.
3. Press the key to highlight **Manual Calibrations**.
4. Press the (Menu In) key.

The Manual Calibration menu consists of these options:

- ◆ **Manual BiDi Registration** (page 4-11) – the manual version of AutoBiDi Calibration.
- ◆ **Manual X Head Registration** (page 4-9) – the manual version of AutoH2H Calibration.
- ◆ **Manual Jet Mapping** (page 4-13) – the manual version of AutoJet.
- ◆ **Jet Status Lines** (page 4-19) – prints a quick test pattern that shows which jets are out.
- ◆ **Default Registration Data** (page 4-19) – sets all registration data to zero.

After calibration and jet mapping, perform a linearization or color calibration (as supported by your print server or RIP). For further information, see “Linearization” on page 4-24.

Manual X Head Registration

Precise positioning of each drop of ink is essential for optimal print quality. This is possible only if you register all printheads in the printhead assembly to each other in the X (along the length of the platen) direction.

This is a two-part process:

- ◆ Print a registration pattern.
- ◆ Enter the X registration data for each head.



Note This is the manual version of AutoH2H Calibration (see “Auto Calibrations” on page 4-20 for details).

1. On the **Manual Calibrations** menu, press the ▼ key repeatedly to highlight **Manual X Head Registration**.
2. Press the ↶ (Menu In) key to select the option.

The control panel asks whether you want to print a manual head-to-head calibration page.

- ◆ If you have a calibration pattern from a recent print, you can use it to calibrate the heads. Press ✕ (Cancel) and go to the next step.
- ◆ If you need to print a new calibration pattern, press ► (Proceed). The printer prints a calibration page.

When the calibration page has printed, the control panel displays this prompt:

Take readings from left side of pattern.

3. Press the ► key.

The control panel displays this message:

X Direction Registration
Head 2: +0

4. Examine the X direction pattern (in the left-hand group of patterns) for the current head, and determine which pattern of colored and black lines are the closest to perfectly aligned.

Use a printer's loupe or magnifying glass if the patterns are difficult to see.

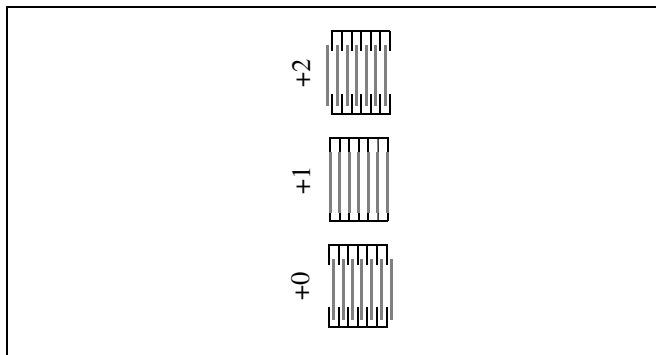


Fig. 4-1. Sample head calibration patterns.
In this example, pattern "+1" is aligned the closest,
so "+1" would be entered.

5. Press the ▲ or ▼ control panel keys repeatedly until the number next to the pattern that is closest to aligned perfectly is displayed.

For example, if pattern +1 is the closest aligned, press the ▲ key to change the display to:

```
      X REG  
HEAD-1      +1
```

If a printhead is extremely out of alignment, there may be no pattern in alignment. Since the black vertical bars are five pixels apart, you can add +5 or -5 to a pattern number to shift the colored bars up or down by one black bar. Alternatively, you can repeatedly perform the X calibration, which will move the head in smaller increments, until the head is aligned.

6. Press ► (Proceed).

The control panel message increments the head number by one.

7. Repeat steps 4 through 6 for each of the heads.

When you have entered registration values for all of the patterns, the control panel displays this message:

Registration successful.

Manual BiDi Registration

Bidirectional registration is a method to align each of the print-heads so that dot placement is accurate in both directions along the X axis (along the direction of printhead travel).

The bidirectional registration pattern consists of a series of vertical lines. Half the pixels in this pattern are printed in one direction, half of them in the other direction. When the pixels are accurately aligned, the pattern is clear. When the dots are not aligned, the pattern appears fuzzy and ill-defined.



Note AutoBiDi Calibration is the automatic version of this calibration. Try AutoBiDi first before running this manual calibration (see “Auto Calibrations” on page 4-20 for details).

1. On the **Manual Calibrations** menu, press the ▼ key repeatedly to highlight **Manual BiDi Registration**.
2. Press the ↶ (Menu In) key to select the option.
3. Press ► (Proceed).

The control panel displays this prompt:

Print a manual bidi registration page?

4. Press ► (Proceed).
The printer prints the calibration pattern you selected.
5. When the calibration page has printed, the control panel displays this prompt:

Bidi registration
Head 1: 0

6. Examine the BiDi Registration pattern for the current head, and determine which pattern is the closest to perfectly aligned.

Use a printer's loupe to select the pattern, since the lines in the patterns may be difficult to see.

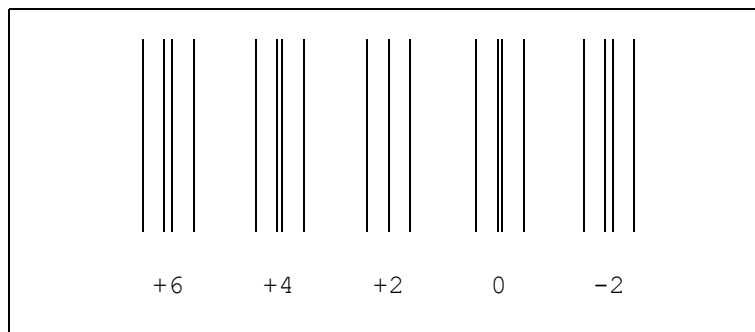


Fig. 4-2. BiDi Registration pattern.

7. Press the ▲ or ▼ control panel keys repeatedly until the number next to the pattern that is closest to aligned perfectly is displayed.

For example, if pattern +2.0 is the closest aligned, press the ▲ key to change the display to:

HEAD-1 +2.0

If a printhead is extremely out of alignment, there may be no pattern in alignment. Since the black vertical bars are nominally five pixels apart, you can add +5 or -5 to a pattern number to shift the colored bars right or left by one black bar. Alternatively, you can perform the BiDi Registration repeatedly, which will move the head in smaller increments, until the head is aligned.

8. Press ► (Proceed).

The control panel message increments the head number by one.

9. Repeat steps 6 through 8 for each of the twelve heads.

When you have entered registration values for all heads, the control panel displays this message:

Registration Successful

Manual Jet Mapping

Jets that are missing or misfiring are usually detected by the AutoJet calibration. Alternatively, you can map out jets manually using the Manual Jet Mapping function. You may want to manually map weak or misdirected jets that AutoJet does not substitute.



Tip AutoJet is the automatic version of this calibration (see “AutoJet” on page 4-3 for details).



Tip For best results, print the prime bars and purge the printheads as necessary to ensure the maximum number of working jets. See “Checking Jet Health” on page 3-7 for instructions.

1. On the **Manual Calibrations** menu, press the ▼ key repeatedly to highlight **Manual Jet Mapping**.
2. Press the ↵ (Menu In) key to select the option.

The control panel displays this message:

Print Jet Map?

If you have a calibration pattern from a recent print, you can use it to calibrate the heads. Press ✕ (Cancel) and go to the next step. Otherwise, press ▶.

The printer prints a jet map test pattern.

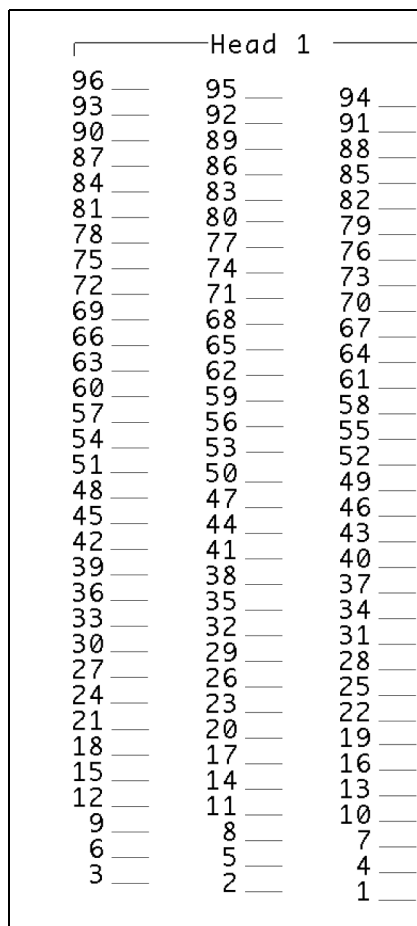


Fig. 4-3. Sample jet mapping pattern (Head 1 of 16)

- ◆ If a line segment is missing or broken, the jet number shown next to it is out.
- ◆ If a line segment is marked with a code letter:
 - R - no replacement
 - S - user disqualified "soft" jetout
 - H - user disqualified "hard" jetout
 - D - disqualified (and replaced) by AutoJet

3. When the calibration pattern has printed, the control panel displays a menu with the following options:
 - ◆ **Report individual soft bad jets** — enables you to report a “soft” bad jet, which can be automatically reenabled if AutoJet finds it working.
 - ◆ **Report individual hard bad jets** — enables you to report a “hard” bad jet, which will not be checked or reenabled by AutoJet.
 - ◆ **Clear individual bad jets** — enables you to clear (mark as good) a jet.
 - ◆ **View current bad jets** — lists the bad jets on a given printhead.
 - ◆ **Clear all bad jets** — clears (marks as good) all jets currently marked as unusable.

Select an option and follow the corresponding procedure below.

Report Individual Bad Jets

When you select Report Individual Bad Jets, the control panel displays the following prompt:

Head 1:
Press Proceed to report a bad jet.

4. Press ▲ and ▼ to select a head number, then press ► (Proceed).

The control panel displays a numeric keyboard that you can use to enter the number of the bad jet.

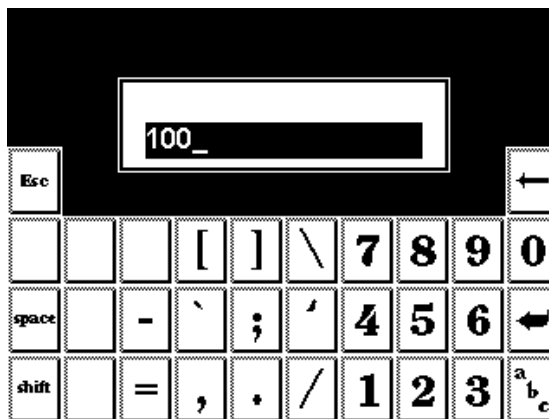


Fig. 4-4. Numeric entry screen

5. Enter the jet number, then press the Enter key.
6. When you are finished entering jet numbers, press the Esc key.

The control panel displays the head selection message again.

7. Press ▲ and ▼ to select the next head number, then press ► (Proceed).
8. Repeat steps 5 through 7 for each head containing bad jets you want to report.
9. When you are finished reporting bad jets, press ✕.

The control panel displays the previous menu.

Clear Individual Bad Jets

When you select Clear Individual Bad Jets, the control panel displays the following prompt:

Head 1:
Press Proceed to clear a bad jet.

10. Press ▲ and ▼ to select a head number, then press ► (Proceed).

The control panel displays a numeric keyboard that you can use to enter the number of the bad jet.

11. Enter the jet number, then press the Enter key.

12. When you are finished entering jet numbers, press the Esc key.
The control panel displays the head selection message again.
13. Press ▲ and ▼ to select the next head number, then press ► (Proceed).
14. Repeat steps 11 through 13 for each head containing bad jets you want to clear.
15. When you are finished clearing bad jets, press ✕.
The control panel displays the previous menu.

View Current Bad Jets

When you select View Current Bad Jets, the control panel displays the following prompt:

Head 1:
Press Proceed to view bad jets.

16. Press ▲ and ▼ to select a head number, then press ► (Proceed).
The control panel displays a message that lists the bad jets by number.
17. Press ► to return to the head selection screen.
18. Repeat steps 16 and 17 for each head you want to check for bad jets.
19. When you are finished clearing bad jets, press ✕.
The control panel displays the previous menu.

Clear All Bad Jets

When you select Clear All Bad Jets, the control panel displays the following prompt:

Are you sure you want to clear
ALL reported bad jets?

- ◆ Press ✕ to cancel this function, or
- ◆ Press ► (Proceed). The control panel displays this message:

Do you want to clear the hard bad jets?

- ◆ Press **No** to clear the soft bad jets only.
- ◆ Press **Yes** to clear both the hard and soft jets.

The control panel displays this message:

All reported bad jets have been cleared.

20. Press ►.

When you have finished mapping jets, the following summary appears on the control panel:

x soft jets currently reported bad.
x hard jets currently reported bad.
x new soft bad jets reported.
x new hard bad jets reported.
x previous soft bad jets cleared.
x previous hard bad jets cleared.

where x is the number of jets.

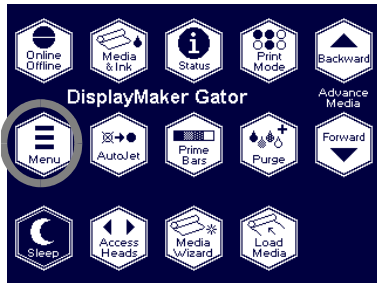
Jet Status Lines

This option prints the Manual Jet Mapping test pattern (see Fig. 4-3 on page 4-14) that shows which jets are working, and which jets are out, but does not run the Manual Jet Mapping calibration (see “Manual Jet Mapping” on page 4-13 for information).




Default Registration Data

This option resets all registration data. Since there is no registration data after running this option, all calibration values must be reestablished by running the calibrations.

Auto Calibrations





The printer's piezo printheads are aligned at the factory and should only occasionally require you to run an automatic bidirectional or head-to-head calibration.

1. On the Front Page screen, press the  (Menu) key to enter the menu system.
2. Press the  (Menu In) key display the **Calibrate Printer** menu.
3. Highlight **Auto Calibrations** and press the  (Menu In) key.
4. Select one of the Auto Calibrations.

- ◆ **AutoBiDi (bidirectional) Calibration** — ensures that every working jet fires a pixel at precisely the same location (regardless of the carriage direction of travel).
- ◆ **AutoH2H (head-to-head) Calibration** — ensures that the printheads are in alignment relative to each other.
- ◆ **AutoJet Calibration** — locates and substitutes missing jets for working jets. This is the same calibration performed as when you press the AutoJet button on the Front Page screen (see "AutoJet" on page 4-3).
- ◆ **Full AutoSet** — runs AutoJet and Auto BiDi Calibration in sequence. The minimum media width allowed for AutoSet is 18 inches (46 cm).

When you select a calibration, the control panel prompts whether you want to perform a Purge-n-Wipe before continuing.

5. Choose whether to perform a Purge-n-Wipe.
By recovering clogged printheads, you reduce the number of jet substitutions required.
 - ◆ Press  to initiate a Purge-n-Wipe. The printheads are purged, then wiped.
 - ◆ Press  to skip the Purge-n-Wipe.

Then the printer prints a test pattern then reads it and makes the necessary adjustments or jet substitutions.

Calibration Summary

These options allow you to print a summary of the Full AutoSet calibration, or transmit calibration data to a log file on the print server.

- ◆ **AutoSet Summary** — when enabled, a table of the results of the Full AutoSet calibration is printed after the AutoSet test patterns. When you enable the AutoSet Summary, you can show or hide the detailed calibration data.

The screenshot displays the AutoSet Summary output. It includes a header section with calibration results, a table of head registration data, and a table of jet replacement status.

```

--- Calibration Results ---
-----
SUCCESSFUL CALIBRATION
-----
Date:
Software Version:
Printer: DisplayMaker Gator
  
```

Head	1	2
All Jets Replaced in Billboard Quality Mode	Yes	Yes
All Jets Replaced in Production Quality Mode	Yes	Yes
All Jets Replaced in High Quality Mode	Yes	Yes

Fig. 4-5. AutoSet Summary

- ◆ **Log Head Registration Data** — sends head registration data to a log file on the print server.
- ◆ **Log Jet Data** — sends jet data to a log file on the print server.

Straightening the Media Path

For optimal print quality, the media must feed in as straight a line as possible from the supply to the takeup. This can be accomplished by aligning the sides of the media as straight as possible from supply to takeup before engaging the pinch rollers, and by smoothing the media web as much as possible before attaching it to the takeup. See “Loading Roll-Fed Media” on page 3-16 instructions.

Printer assembly also affects the media path. If the printer is not assembled to the stand precisely, according to the instructions in Chapter 1, they could be misaligned. This could lead to the media “steering” to the right and left as it is wound onto the takeup spool.

Leveling and stabilizing the stand also helps to straighten the media path:

- ◆ Locate the printer on a flat, level surface
- ◆ Ensure that all four leveling feet contact the floor and adjust them as necessary to level the printer (or align the printer in a single plane)
- ◆ Securely tighten the two silver screws that attach the printer to the stand

For rigid cut-sheet media, the input and output tables must be leveled with the printer platen.

Image Sensor Calibration

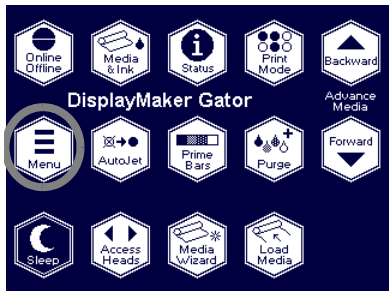
The precise location of the image sensor (camera) relative to the printheads is critical for edge-to-edge printing on rigid cut-sheet media. The Image Sensor Calibration determines this distance with precision.







Run this calibration after installing the printer for the first time, and whenever the camera height is changed (“Setting the Camera Height” on page 5-15) or the camera is replaced.

To calibrate the location of the image sensor:

1. Load media.

Load enough media (either roll-fed or cut-sheet) to print the small calibration pattern.



2. On the Front Page screen, press the  (Menu) key to enter the menu system.
3. From the control panel menu, press the  key repeatedly to highlight **Service Printer**.
4. Press the  (Menu In) key.
5. From the Service Printer menu, press the  key repeatedly until **Image Sensor Calibration** is highlighted.
6. Press the  (Menu In) key.
7. Press the  key to begin the calibration.
The calibration runs with no further action from you.
8. After the calibration completes, load or reload media and begin printing.

Linearization

As the density of an image varies from highlights to shadows, or from lighter tints to darker tints, the printer should accurately reproduce these areas in a predictable, or linear, fashion. The process of linearization (or color calibration) involves printing and reading color test patches, and calibrating the printer to ensure that the expected and printed densities will match. This in turn will ensure optimal color matching.

You should perform a color calibration when:

- ◆ You notice a shift (change) in color output
- ◆ First loading a new media type that you have never calibrated
- ◆ Changing print mode (only if the most precise color matching is required)

The piezo printing technology used by the printer is much less prone to changes in ink drop size over time than thermal inkjet technology; therefore, each media type should only have to be linearized once.

Color calibration is a feature of the print server or RIP connected to the printer. Refer to the documentation that accompanies the print server for further information.



Tip For best results, be sure that the color calibration patches are dry before taking readings.



Tip Changing the head height and camera height will affect linearization results. Be sure that the head height and camera height are set to their desired positions with the gauges provided before linearizing.

CHAPTER 5

Maintaining the Printer

This chapter describes how to maintain the printer:

- ◆ Maintenance Schedule (page 5-2)
- ◆ Clean the Rail and Bearings (page 5-4)
- ◆ Empty Excess Ink (page 5-7)
- ◆ Printhead Maintenance (page 5-8)
- ◆ Cleaning Clogged Ink Jets (page 5-9)
- ◆ Set the Printhead and Camera Height (page 5-12)
- ◆ Calibrate the Service Station (page 5-17)
- ◆ Replace Ink Filters (page 5-19)
- ◆ Extended Power Down and Restart (page 5-21)

Maintenance Schedule

The printer is designed for low-maintenance operation. Most operator-performed maintenance is performed on the print-heads.

Task	Description
Interval: Weekly or as needed	
Clean pinch rollers	Inspect for ink and dust buildup, if necessary wipe with lint-free cloth moistened with SolaChrome-HR Cleaning Solvent. Use the Maintenance > Clean Grit Rollers function to rotate the grit rollers for cleaning.
Clean carriage rail and bearings (page 5-4)	Inspect for ink and dust buildup, clean if necessary (see "Clean the Rail and Bearings" on page 5-4).
Clean printheads	See "Checking Jet Health" on page 3-7. To recover jets that are unrecoverable with the automated Purge-n-Wipe, see "Cleaning Clogged Ink Jets" on page 5-9.
Clean platen area	Carefully wipe ink from the platen with a cloth moistened with SolaChrome-HR Cleaning Solvent, especially near the right and left edges.
Inspect service station wipers for ink buildup and clean as needed	Inspect the service station wipers for ink buildup. If found, clean the wipers with a lint-free cloth moistened with SolaChrome-HR Cleaning Solvent.
Interval: As needed	
Adjust service station height (page 5-17)	Compensates for the reduced effectiveness of the wipers after they have been exposed to inks and cleaning solvent for an extended period.
Calibrate the service station (page 5-17)	Aligns the service station wipers to the centers of the printheads.
Clean capping station	With the printheads uncapped, the capping station assembly can be pulled straight forward and out of its tracks. Clean the capping pad with cleaning solvent.
Clean postheater cover	Clean the embossed postheater cover only with an ammonia-free, deionized cleaner such as Sparkle (http://www.glasscleaner.com/). Other cleaners may leave a sticky residue that increases the possibility of head strikes.
Clean spittoons	Clean with cleaning solvent and lint-free cloth.

Task	Description
Interval: At control panel warning	
Empty excess ink (page 5-7)	The excess ink containers on the printer stand legs should be emptied when half full. When the container under the service station is full, the control panel displays an Action message, and no further Purge-n-Wipes and idle spits will occur until the container is emptied.
Replace ink filters (page 5-19)	Replace all five filters as a set, to prevent ink pump failure. The control panel will display a Warning message when 20 liters of ink have passed through the set of filters. You may continue printing past this point, but printhead fill errors may occur.

Clean the Rail and Bearings

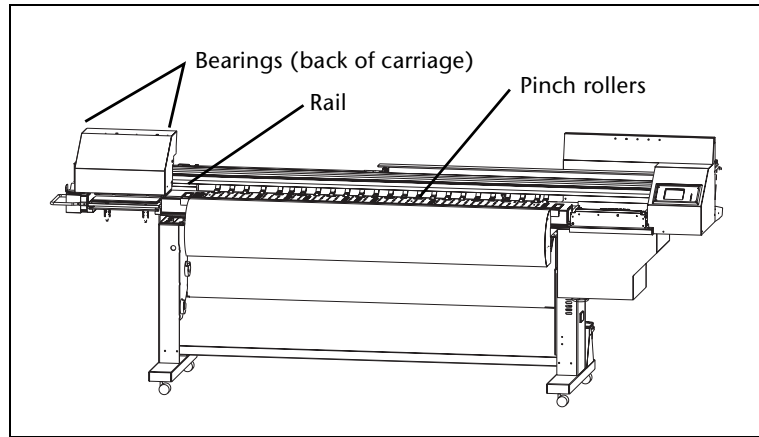


Fig. 5-1. Location of rollers, bearings, and rail

The carriage rail carries the printhead carriage across the width of the platen. As dust and ink accumulates on the rail, the material could accumulate on the carriage bearings (wheels) and cause banding in printed output or noisy (“click-click-click”) carriage motion.

Pinch Rollers



Caution **DO NOT ALLOW ISOPROPYL ALCOHOL TO TOUCH THE PRINTHEADS**, especially the inkjet orifice plates. Contact with the ink could cause the ink to coagulate, rendering the printhead unusable and requiring it to be replaced. Be sure that cleaned surfaces have dried before printing.

2. Clean the grit rollers.

Select **Maintenance > Clean Grit Rollers** from the menu. This advances the grit rollers continuously so they can be cleaned with a lint-free cloth or wipe moistened with isopropyl alcohol.

- Rail** 3. Wipe the entire length of the rail with a lint-free cloth or wipe moistened with isopropyl alcohol.

The rail surfaces that must be clean are the surfaces that touch the carriage bearings. These are the top surface, including the front and back of the front lip, and the side surface, behind the belt. Move the carriage manually or press the Carriage key on the control panel Front Page so you can access and clean the entire rail.

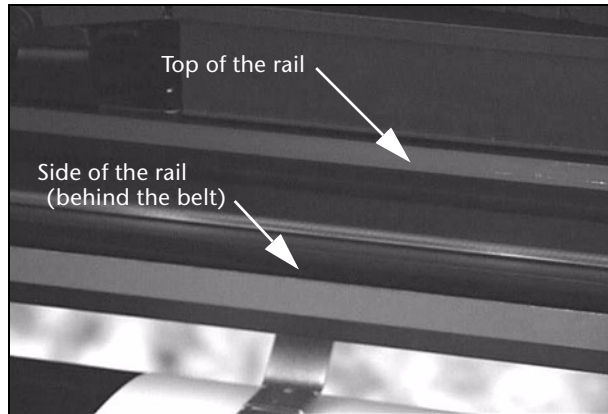


Fig. 5-2. Cleaning the rail

- Carriage Bearings** 4. From the control panel Front Page screen, press the **Access Heads** key.

The carriage moves out of the service station to the access carriage position. The bearings are on the back of the carriage.

There are four bearings that should be kept clean, one pair on each end of the carriage. Each pair of bearings rolls along the front and back of the lip on the top of the rail. If any buildup occurs on one of these bearings, banding or other artifacts could appear in printed output. This buildup can range from a fine dust to visible particles.

The fifth bearing rolls along the lower edge of the rail, behind the belt. Cleaning this bearing is not necessary, since it usually does not get dirty.

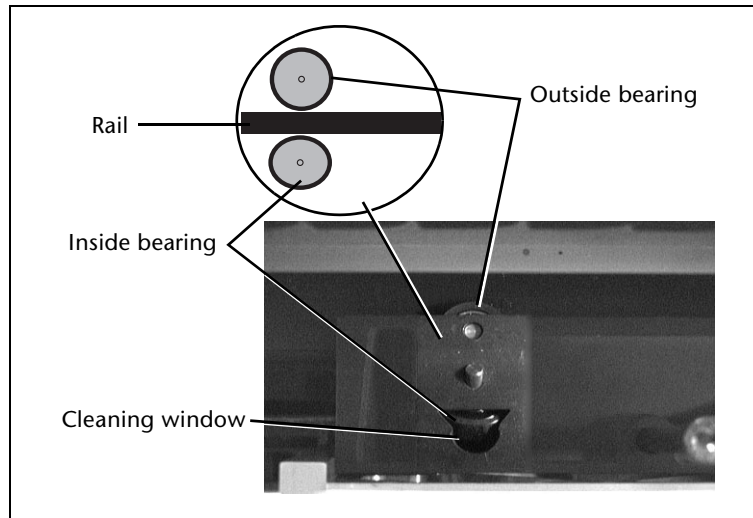


Fig. 5-3. Carriage bearings, left pair shown

5. Clean the left and right outside bearings.

Moisten a cotton swab with isopropyl alcohol or water, place it against the left side of the bearing, and manually push the carriage to the left. Then place the swab against the right side of the bearing, and manually push the carriage to the right. Repeat once or twice. Remove any large dust particles you see.

6. Clean the left and right inside bearings.

Insert a moistened cotton swab into the bearing cleaning window, and clean the bearing by manually pushing the carriage to the left and right. Repeat once or twice. Remove any large dust particles you see.

7. Press the ► (Proceed) key to return the carriage to the home position.

Cleaning the Encoder Strip

The top surface of the encoder strip should be cleaned as needed (approximately monthly under typical service) with a lint-free cloth moistened with SolaChrome-HR cleaning fluid. After cleaning, wipe the top surface of the encoder strip with a new lint-free cloth moistened with isopropyl alcohol. To check the condition of the encoder, view it with a piece of white paper held underneath it. The encoder strip should be cleaned if the encoder index marks (fine black lines that are perpendicular to the length of the encoder strip) are not clearly visible.

Empty Excess Ink

Ink or cleaning solvent that has been expelled (“spit”) for ink jet maintenance or from a purge operation drains from the spit-toons and service station areas to excess ink containers. When the containers fill with ink, they should be emptied.

The excess ink container near the service station will need to be emptied when it is full or near full. This can be determined by visual inspection or when the float sensor reports a full condition via the control panel.

The ink in the excess ink container near the capping station may evaporate at or near the same rate as it is collected, so it may never fill the container. Visually check the amount of ink periodically, and empty the container as needed.

Have a paper towel ready to catch the small amount of ink and cleaning solvent that will spill out of the drain tube as you disconnect it. The excess ink container’s tray is designed to catch these spills for easier cleanup. You may also want to wear protective gloves during this procedure.

1. Close the stopcock valve on the drain tube.
This prevents ink from continuing to flow out the end of the tube.
2. Disconnect the drain tube from the excess ink container.
3. (Service station reservoir only) disconnect the sensor cable from the float sensor.
4. Lift the container out of its tray.
5. Empty the excess ink and cleaning solvent into a solvent disposal container.



Note Dispose of ink and cleaning solvent only according to the Material Safety Data Sheet (MSDS) and applicable laws and regulations. The MSDS is available on the MacDermid ColorSpan web site (www.colors-span.com).

6. Replace the container in its tray.
7. Reconnect the drain tube to the container.
8. Open the stopcock valve on the drain tube.
9. (Service station reservoir only) reconnect the sensor cable to the float sensor.

Printhead Maintenance

The printer uses air pressure to both fill and evacuate ink and cleaning solvent from the printheads. The following functions are available from the menu at **Maintenance - Printhead Procedures**:

- ◆ **Cleaning Solvent Soak** – empties the printheads of all ink, fills all heads with cleaning solvent, and prompts you to cap the printheads. Reverses this process after the printheads have soaked (for example, overnight). See page 5-10 for instructions.
- ◆ **Prep for Storage/Shipping** – empties the printheads of all ink, fills all heads with cleaning solvent, then empties the printheads. See “Extended Power Down and Restart” on page 5-21 for instructions.
- ◆ **Load Ink In All Heads** – when installing ink for the first time, or when restarting the printer after an extended power down period, this function fills the empty printheads with cleaning solvent, empties the printheads, and fills the heads with ink. See “Extended Power Down and Restart” on page 5-21 for instructions.
- ◆ **Fill Heads with Solvent** – fills the printheads with cleaning solvent, one color set of four printheads at a time. Should only be done with empty printheads.
- ◆ **Fill Heads with Ink** – fills the printheads with ink, one color at a time. Should only be done with empty printheads.
- ◆ **Empty Heads (Fill With Air)** – empties all printheads by purging the ink and cleaning solvent with air.

Cleaning Clogged Ink Jets

All printers that use solvent-based inks are susceptible to print-head clogging. This is caused by the solvent evaporating and leaving behind the pigments, which is desirable on printed output but not in the printheads!

The printer incorporates many automatic features and manual procedures for preventing clogs from occurring, and for recovering ink jets that do become clogged:

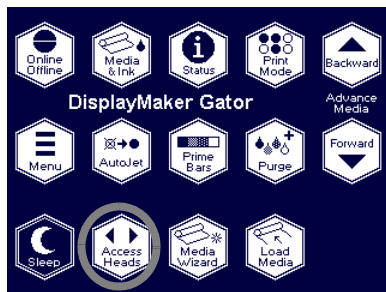
- ◆ Purge-n-Wipe
- ◆ Manual Cloth Wipe
- ◆ Cleaning Solvent Soak
- ◆ Cleaning the Service Station Doctor Blade

Purge-n-Wipe

All sixteen heads can be purged at once, or one color set (four heads) can be purged for increased pressure. See “Checking Jet Health” on page 3-7 for instructions.

Manual Cloth Wipe

If repeated Purge-n-Wipes fail to recover enough jets, you can wipe them manually with a 100% polyester, Class 100 clean-room cloth soaked with SolaChrome-HR cleaning solvent. A manual wipe is also recommended after uncapping the printheads (see “Uncap the Printheads” on page 3-14 for instructions).



DO NOT USE ISOPROPYL ALCOHOL ON THE PRINTHEADS.

1. To access the heads for cleaning, select **Access Heads** from the control panel Front Page.
2. After the carriage has moved over the capping station, remove the capping station pad by pulling it forward and out of the printer.
3. Wipe the printheads and any areas of the carriage that have collected ink.
4. Press **Proceed** on the control panel to return the carriage to the service station.
5. Replace the capping station pad.

If it appears that the service station is not wiping the printhead properly, it may be misaligned or too low (see “Calibrate the Service Station” on page 5-17).

Cleaning Solvent Soak

If a manual cloth wipe fails to recover enough jets, you can soak the thin foam pad that ships with the printer with SolaChrome-HR cleaning fluid, then cap the printheads with this pad overnight as shown (Fig. 5-4 on page 5-10).

DO NOT USE ISOPROPYL ALCOHOL ON THE PRINTHEADS.

From the menu, select Maintenance - Printhead Procedures - Cleaning Solvent Soak. This process empties the printheads of ink, fills them with cleaning solvent, and prompts you to cap the heads. After several hours (overnight), uncaps the printheads and the process is reversed.

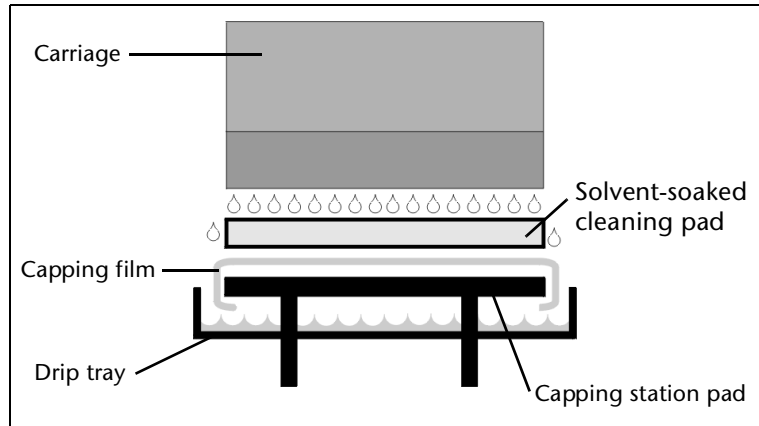


Fig. 5-4. Using the cleaning foam pad on the service station

Cleaning the Service Station Doctor Blade

With use over time, the doctor blade that cleans excess ink from the service station wiper blades will accumulate a buildup of ink. This will reduce the cleaning effectiveness of the doctor blade, resulting in “dirtier” wiper blades and more clogged printhead jets. To keep the inkjets clear, regularly inspect and clean the doctor blade with SolaChrome-HR Cleaning Solvent.

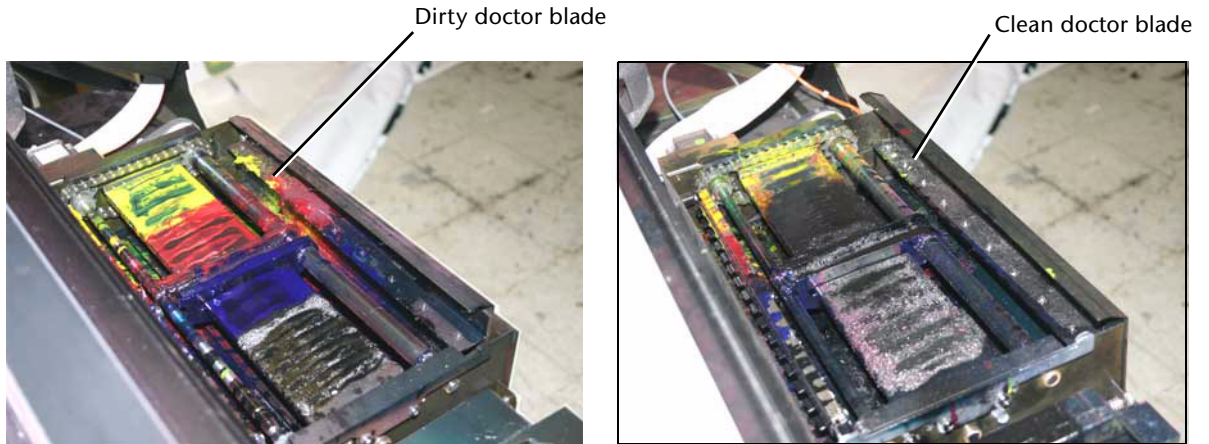


Fig. 5-5. Cleaning the doctor blade

Set the Printhead and Camera Height

The correct head height above the media is critical to output quality.

- ◆ **Lower head heights** reduce overspray, increasing image quality, but also increase the chance of the printheads striking the media. Printhead strikes are most likely with adhesive-backed vinyls and rigid cut-sheet media that is not perfectly flat.
- ◆ **Higher head heights** increase overspray, slightly decreasing image quality, but also decrease the chance of printhead strikes.

The correct camera (digital imaging sensor) height above the media is critical so that its lens can focus accurately for optimal linearization, printer calibrations, and print quality.

The printer includes three gauges: a “minimum” head height gauge (0.085 inches above the media), a “maximum” head height gauge (0.115 inches above the media), and a camera height gauge.

If you change the head height above the media, use the camera height gauge to reset the height of the camera. The camera is attached to the carriage in a separate enclosure that can be raised and lowered independently of the printheads.

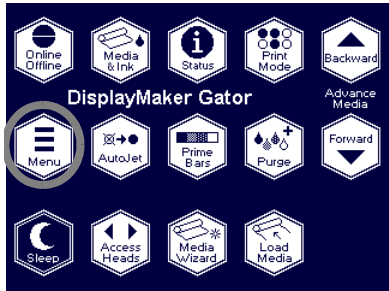
For example, if you set the head height above a certain media with the *minimum* gauge, then switch to a thicker media and again set the head height with the *minimum* gauge, the camera will remain at the correct height above the media without adjustment. If you instead reset the head height with the *maximum* gauge, changing the head height above the media, then you should reset the camera height.






To ensure good automatic printhead wiping, check the service station height and recalibrate if necessary after changing the printhead height (for instructions, see “Calibrate the Service Station” on page 5-17).



Tip If you notice an unacceptable change in color quality after changing the head height, perform a ColorMark color calibration (“linearization” on a third-party RIP) or create a new profile.

Setting the Head Height



1. Load the media that you want to calibrate.
For instructions, see “Loading Roll-Fed Media” on page 3-16.
2. On the Front Page screen, press the  (Menu) key to enter the menu system.
3. From the control panel menu, press the  key to highlight **Printer Settings**.
4. Press the  (Menu In) key.
5. From the Settings menu, press the  key repeatedly until **Head Height** is highlighted.
6. Press the  (Menu In) key.
The carriage moves out over the platen.
7. Position either the minimum or maximum head height gauge as shown in Fig. 5-6.

Do not measure the head height from the surface of the postheater.

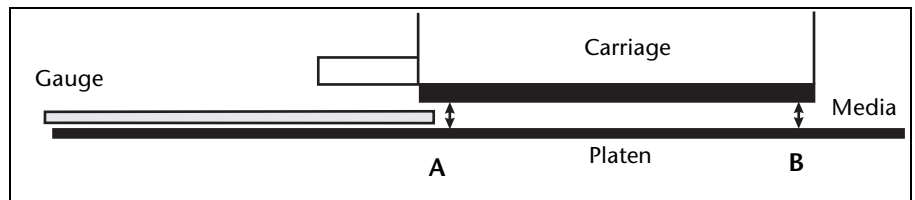


Fig. 5-6. Head height measurement points A and B



Tip To lower or raise the printheads without the gauge, use two hex wrenches to turn the head height adjustment screws (at the top of the carriage) simultaneously and by the same amount. (Three-quarters of a turn of the screws moves the carriage approximately 0.03 inches, or approximately the distance between the min and max head height gauges.) Then go to step 1 to set the camera height.

8. Use the supplied hex wrench to turn one of the head height adjustment screws counterclockwise until the end of the gauge will *not* fit under the carriage as shown in Fig. 5-6.
The head height adjustment screws can be accessed from the top of the carriage. The access holes are labeled with a white circular label.

The carriage must be lowered below the height of the gauge and then raised. If the carriage is simply lowered on top of the gauge, the carriage will tend to settle lower during printing, changing the head height and invalidating the calibrations.



Caution Do not allow any part of the gauge to touch the printheads, and do not leave the gauge on the platen after setting the head height. If the gauge is allowed to touch or strike the printheads, the printheads could be damaged permanently and require replacement.

9. Turn the head height adjustment screw clockwise, just until the end of the gauge slides under the carriage.
10. Remove the gauge and repeat steps 7 through 9 at the other side of the carriage.
11. Verify the heights at both sides of the carriage and adjust if necessary.

Setting the Camera Height

1. Remove the carriage cover.

The carriage cover is attached to the carriage with two screws on each side (see Fig. 5-7 below).

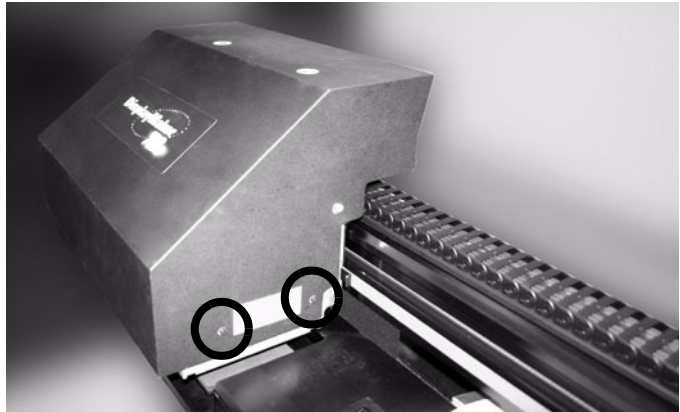


Fig. 5-7. Location of carriage cover screws

2. Loosen the three camera enclosure mounting screws (see Fig. 5-8 below).

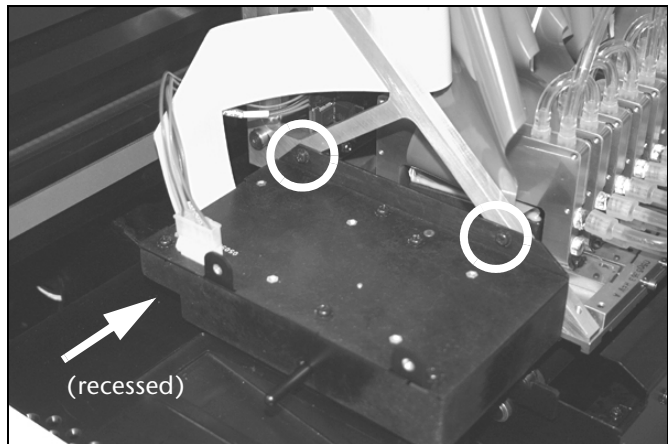


Fig. 5-8. Camera enclosure mounting screws

3. Set the camera height.

Insert the camera height gauge as shown in Fig. 5-9 below.

Raise or lower the camera enclosure so that it touches the top of the gauge.

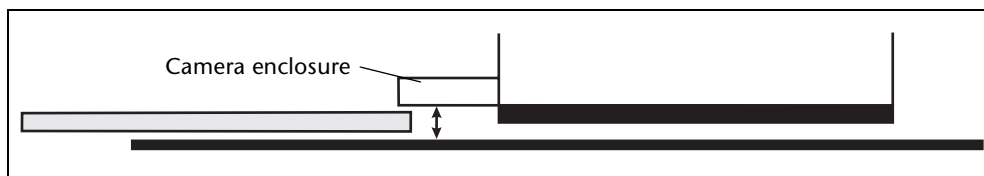


Fig. 5-9. Camera height measurement point

4. Tighten the camera enclosure mounting screws.
5. Replace carriage cover and screws.
6. Press ► to return the carriage to the service station.
The control panel displays a message asking whether you want to calibrate the service station. See “Calibrate the Service Station” on page 5-17 for instructions.
7. Press ✓ to calibrate the service station, or ✗ to continue.
The control panel displays a message asking whether you want to perform a bidirectional (bidi) calibration.
8. Press ✓ to perform a bidi calibration, or ✗ to continue.
9. Observe a Purge-n-Wipe cycle to ensure that the service station wipers are centered and properly deflected during a wipe.
 - ◆ If the wipers are not centered, see “Calibrate the Service Station” on page 5-17 for instructions.
 - ◆ If the wipers do not touch the service station or are over-deflected, see “Calibrate the Service Station” on page 5-17 for instructions.
10. Calibrate the position of the camera (image sensor) by performing an Image Sensor Calibration (see “Image Sensor Calibration” on page 4-23).

Calibrate the Service Station

Service station calibration enables you to properly align the service station wipers to the printheads. When properly aligned, the service station wipers should be centered on the printheads.

Setting the service station height should not be necessary unless the printhead height is changed by a large amount, or you notice that the service station wipers are not wiping the printheads adequately.

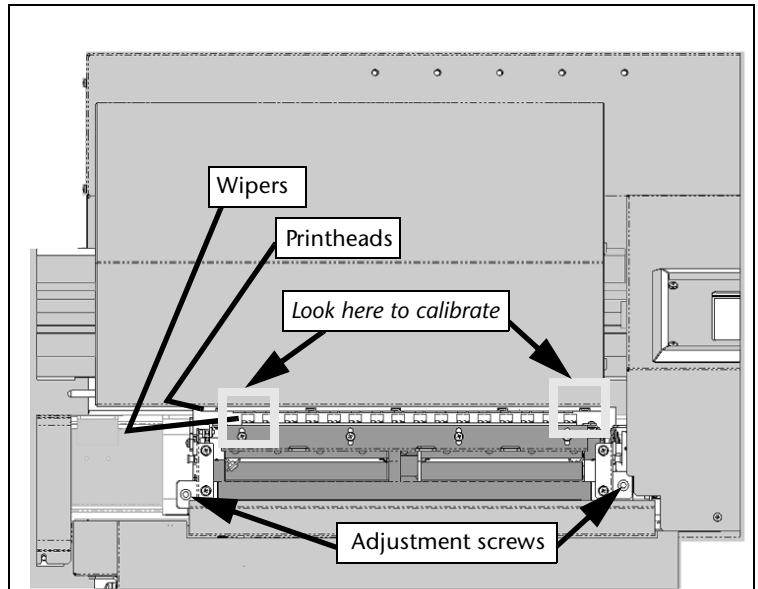
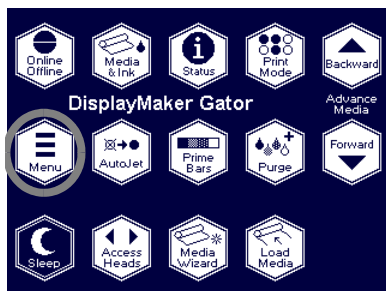







Fig. 5-6. Service station (cover removed for clarity)



1. On the Front Page screen, press the  (Menu) key to enter the menu system.
2. Press the  key repeatedly to highlight **Service Printer**.
3. Press the  (Menu In) key display the **Service Printer** menu.
4. Press the  key repeatedly to highlight **Service Station**.
5. Press the  (Menu In) key.

The control panel prompts you to confirm that you want to calibrate the service station.

6. Press ► (Proceed).

The control panel displays a message asking whether you want to calibrate the service station position. If you choose to do so, the control panel walks you through the procedure. Shine a flashlight through the carriage cutouts (see Fig. 5-6 on page 5-17 for location) to see how the wiper at the left and right ends aligns with the printhead above it.

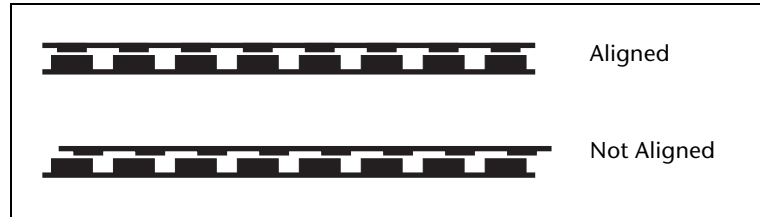


Fig. 5-10. Service station alignment

7. Press ► (Proceed).

The control panel displays a message asking whether you want to change the height of the service station. If you choose to do so, the control panel displays a message that explains how to set the service station height. Use the supplied hex wrenches to turn the adjustment screws on the left and right sides of the carriage simultaneously, to ensure that the service station remains level.

When properly adjusted, the wipers would just touch the pin plate between the printheads. It may be necessary to misalign the carriage as shown below to precisely measure this distance. At this height, after the carriage is realigned to the service station, the wipers will contact the printheads with the correct amount of deflection. See Fig. 5-7 below.

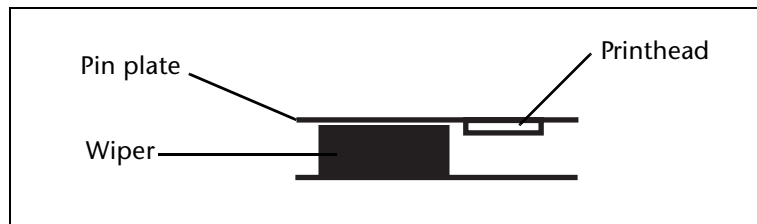


Fig. 5-7. Service station height measured by wiper contact with the pin plate

Replace Ink Filters

The control panel displays a Warning message on the control panel when 20 liters of ink has passed through the filters. Replace all five the filters as a set. Failure to replace the filters when recommended will eventually cause the filters to clog and prevent ink from reaching the printheads.

Have a paper towel ready to catch the small amount of ink or cleaning solvent that will spill out of some of the tubes and the filter itself as you disconnect them. The reservoir shelf is designed to catch these spills for easier cleanup. You may also want to wear protective gloves during this procedure.

1. Disconnect the tube from the ink box.
2. Remove the ink box from the shelf.
3. Use a Phillips screwdriver to loosen the filter clamp.

See Fig. 5-11 for location.

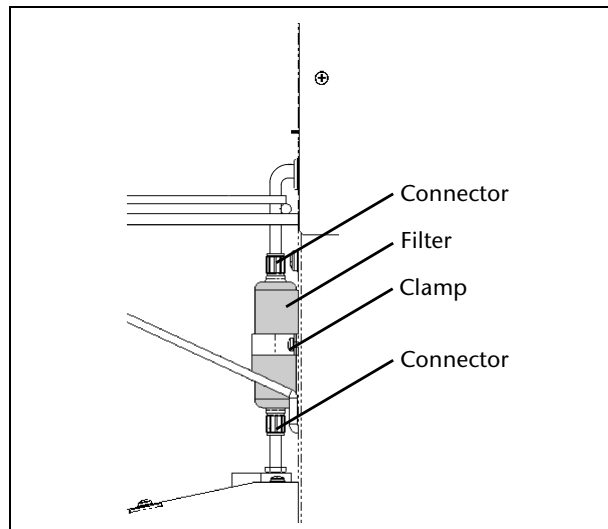





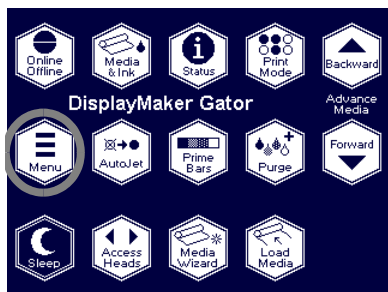


Fig. 5-11. Filter connections

4. Unscrew the hose connectors from filter.
See Fig. 5-11 for location.
5. Remove the old filter.
6. Install the new filter into the filter clamp.

The filter's label has an arrow that indicates the direction of flow. Install the filter with the arrow pointing up.

7. Tighten the filter clamp.
The filter should be secure, but do not overtighten the screw.
8. Connect the hoses to the top and bottom of the filter, and tighten the connectors.
9. Reconnect the ink tube to the ink box.
See "Loading Ink" on page 3-10 for instructions.
10. Replace the ink box.
11. On the Front Page screen, press the  (Menu) key to enter the menu system.
12. Press the  key repeatedly to highlight **Maintenance**.
13. Press the  (Menu In) key display the **Maintenance** menu.
14. Press the  key repeatedly to highlight **Reset Reservoir Filters**.
15. Press the  (Menu In) key.
16. Select the filter(s) you want to reset.



Extended Power Down and Restart

UNDER NORMAL OPERATION, DO NOT POWER DOWN THE PRINTER. Constant vacuum at the printheads is required to prevent ink from running out of the printheads.

If the power must be removed for a brief period of time, you can leave the carriage over the service station (not the capping station) to allow the ink, which will no longer be held inside the printheads by the vacuum/pressure system, to drain into the excess ink reservoir. Power up the printer as soon as possible and cap the printheads if the printer will be idle for four hours or more.






Optionally, you can maintain power to the vacuum system for a brief period of time by using the auxiliary 24 volt power supply, included in the printer accessory kit. This will prevent ink from running out of the printheads, but may not prevent the printheads from drying out. If the printer will be powered down for an extended period, follow the procedure below.

Power Down

If it is necessary to power down the printer for an extended period, for example in order to store or ship it, empty the ink from the printheads, and cap the heads.








Note This process takes approximately **2-1/2 hours and 1 liter of SolaChrome-HR Cleaning Solvent** to perform. Make sure that there is a sufficient amount of Cleaning Solvent in the reservoir before performing this procedure.

1. Unload media, if any is loaded (see “Unloading and Cutting Roll-Fed Media” on page 3-25).
2. On the Front Page screen, press the  (Menu) key to enter the menu system.
3. Press the  key repeatedly to highlight **Maintenance**.
4. Press the  (Menu In) key display the **Maintenance** menu.
5. Press the  key repeatedly to highlight **Prep for Storage/Shipping**.
6. Press the  (Menu In) key.

7. Cap the printheads.
See “Cap the Printheads” on page 3-13 for instructions.
8. Switch the power switch to the off position.

Restart

To restart the printer, follow the procedure below.

1. Switch the power switch to the on position.
2. Uncap the printheads.
See “Uncap the Printheads” on page 3-14 for instructions.
3. On the Front Page screen, press the  (Menu) key to enter the menu system.
4. Press the  key repeatedly to highlight **Maintenance**.
5. Press the  (Menu In) key display the **Maintenance** menu.
6. Press the  key repeatedly to highlight **Load Ink in All Heads**.
7. Press the  (Menu In) key.
8. Load media.
See “Loading Roll-Fed Media” on page 3-16 for instructions.
9. Recover missing jets.
See “Checking Jet Health” on page 3-7 for instructions.

APPENDIX A

Technical Specifications

This chapter lists the printer's specifications and information about ordering supplies.

Specifications

General

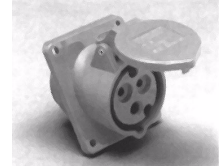
	DisplayMaker 725I	DisplayMaker 985I
Dimensions (Assembled)	<i>Without Tables</i>	<i>Without Tables</i>
	Height: 52.5 inches (133.4 cm) Depth: 33.0 inches (83.8 cm) Width: 135.7 inches (344.7 cm)	Height: 52.5 inches (133.4 cm) Depth: 33.0 inches (83.8 cm) Width: 159 inches (403.9 cm)
	<i>With One Input and One Output Table</i>	<i>With One Input and One Output Table</i>
	Height: 52.5 inches (133.4 cm) Depth: 87.7 inches (222.8 cm) Width: 135.7 inches (344.7 cm)	Height: 52.5 inches (133.4 cm) Depth: 87.7 inches (222.8 cm) Width: 159 inches (403.9 cm)
Weight (Assembled)	<i>Without Tables: 380 pounds (172 kg)</i>	<i>Without Tables: 430 pounds (195 kg)</i>
	<i>With One Input and One Output Table: 505 pounds (229 kg)</i>	<i>With One Input and One Output Table: 555 pounds (252 kg)</i>
Supported Media Widths	24-73 inches (61-185 cm)	24-98.5 inches (61-250 cm)
Maximum Media Thickness	0.25 inch (6.35 mm)	0.25 inch (6.35 mm)
Supported Printing Resolutions (determined by RIP)	600 x 600 dpi 600 x 300 dpi	600 x 600 dpi 600 x 300 dpi
Maximum Print Speeds, Bidirectional	Billboard 600x300: 650 ft ² (60.4 m ²)/hr Billboard 600x600: 400 ft ² (37.2 m ²)/hr	Billboard 600x300: 700 ft ² (65.0 m ²)/hr Billboard 600x600: 438 ft ² (40.7 m ²)/hr
	Production 600x300: 400 ft ² (37.2 m ²)/hr Production 600x600: 200 ft ² (18.6 m ²)/hr	Production 600x300: 438 ft ² (40.7 m ²)/hr Production 600x600: 225 ft ² (20.9 m ²)/hr
	High Quality 600x300: 200 ft ² (18.6 m ²)/hr High Quality 600x600: 100 ft ² (9.3 m ²)/hr	High Quality 600x300: 225 ft ² (20.9 m ²)/hr High Quality 600x600: 112 ft ² (10.4 m ²)/hr
	Unidirectional print speeds (rigid medias only): Approximately 1/2 the speed of the corresponding bidirectional modes.	
	Fine Text mode: Approximately 1/2 the speed of the corresponding normal printing modes (available in Production and High Quality modes at 600x600 dpi).	

Electrical Power**Power used:** 200-240VAC, 50/60 Hz, 14.8 Amps**Required electrical circuit:**

220 VAC, 20 Amps, with NEMA L6-20R locking wall receptacle (North America and Japan), **OR** 220 VAC, 16 Amps, single phase, with IEC 60309 wall receptacle (Europe)



NEMA L6-20R
locking wall receptacle
(North America/Japan)



IEC 60309
wall receptacle
(Europe)

North America: If your building receives power from a standard three-phase supply, note that the printer will use only two of the three phases. This means that your building's three-phase power transformer may have an unbalanced load. Check with your electrician to verify that your building has sufficient capacity for this unbalanced load.

Optional auxiliary power for vacuum system:

Supplied 24 volt DC power supply with universal adapters, connected from the 24 VDC jack on the vacuum/pressure assembly to either of two options:

1. **UPS** — customer-supplied uninterruptible power supply, output 100-240 VAC, 50/60 Hz, minimum of 15 watts of power, provides battery backup to the vacuum system in the event of a power failure.
2. **Wall outlet** — 100-240 VAC, 50/60 Hz, provides temporary power to the vacuum system when it is necessary to power down the printer for service.



Power cord	Required power cord (supplied with printer): North American (UL/CSA approved), length 8.2 feet (2.5 m), OR European (Harmonized), length 8.2 feet (2.5 m)
Ventilation	<p>The printer uses solvent-based inks. The printer does not include an integrated exhaust hood or shielding for collecting the volatile organic compound (VOC) emissions from the inks and cleaning solvent. The owner is responsible for ventilation and VOC recovery as required by local regulations. Connection kits are available from MacDermid ColorSpan to vent VOC emissions to the customer's exhaust system or VOC recovery equipment. Consult your MacDermid ColorSpan reseller for details.</p> <p>The air surrounding the printer should be changed every 1-3 minutes or as desired to reduce or remove the solvent odor. The greater the amount of printing, and the larger the room in which the printer is located, the larger the fan required to change the air at a given rate. The space volume can be reduced with an enclosure around the printer or by moving the printer to a smaller room. Examples:</p> <p>Cubic feet per minute (CFM) (typical) to change the air in 3 minutes/1 minute: Enclosure (4x10x6 feet): 80/240 CFM Small Room (10x12x8 feet): 320/960 CFM Medium Room (10x20x8 feet): 533/1600 CFM</p> <p>Select a fan with a CFM rating at or greater than the calculated CFM. The actual CFM required will vary with local building and airflow conditions.</p>
Operating Conditions	68–85° F (20–30° C) 20–80%, non-condensing
Approvals	Safety: UL, c-UL, CE Emissions: FCC-A, CE Immunity: CE

Performance

Printing Technology	16 piezo-electric inkjet printheads utilizing Micro-Quad™ Jet Technology. Drop size approximately 25 picoliters.
Ink and Cleaning Solution	SolaChrome™-HR 4-color (CMYK) solvent pigmented inks. SolaChrome-HR head cleaning solvent solution, two 3.5-liter excess ink/solvent containers. Each color has its own filter (20 liter life) and pump.
Inkjet Maintenance	On-demand head cleaning. Automatic and on-demand jet recovery. On-demand solvent cleaner purge and ink refill. Manually-actuated capping station, available off-printer cleaning station.
Vacuum/Pressure System	Maintains negative relative pressure at the print-heads and provides air pressure for purging. Nominal relative vacuum: 4.80 inches H ₂ O (8.97 mm Hg) Since relative pressure is maintained, the printer can be operated at various altitudes above or below sea level without adjustments to the system.
Media Handler	Supply and takeup for roll-to-roll handling; use of takeup is optional. Supply accepts 3-inch or 2-inch cores, takeup accepts 3-inch cores only. The media supply roll can be loaded and unspooled in either direction for printing on either side. Releasable pinch rollers ease roll-fed media loading and enables rigid cut-sheet media loading. DisplayMaker 98SI: Spool supports and reinforcement sleeve supports the weight of longer rolls of media less than 72 inches wide.
Drying System	Contact preheater, platen heater, and postheater with user-selectable settings (not used for rigid cut sheets). Optional auxiliary dryer fans speed drying for high-coverage and high-speed prints.
Software Features	Touch screen LCD with graphical interface. Automatic calibration and detection/substitution of missing jets. Media Wizard stores operational parameter sets by media type for subsequent recall.

Supplies and Accessories

Consult MacDermid ColorSpan or your MacDermid ColorSpan representative for an updated listing of supported ink and media.

Use only genuine ColorSpan SolaChrome inks and cleaning solvent in the printer. Use of any other inks or cleaning fluids could damage the printer and will void the warranty.

Supplies and accessories are available from MacDermid ColorSpan by calling:

MacDermid ColorSpan Supplies Sales

- ◆ North America: (800) 723-3002 or (952) 943-3636
- ◆ Europe: +31 23.5622000
- ◆ Asia: (952) 943-3300
- ◆ Latin America: (800) 664-7242 or (952) 943-3600

APPENDIX B

Troubleshooting

This appendix explains how to prevent and diagnose printing problems and provides information about getting help from ColorSpan.

For other software-specific troubleshooting procedures, refer to your application software documentation or the other ColorSpan documentation listed on page vi of this manual.

If your printer is connected to a non-ColorSpan RIP or print server, refer to the accompanying third-party documentation.

- ◆ Troubleshooting Checklist (page B-2)
- ◆ Warranty Claims (page B-5)
- ◆ Diagnostics (page B-7)
- ◆ MacDermid ColorSpan Technical Services (page B-14)

Troubleshooting Checklist

Before you troubleshoot your printer, make sure that it is properly installed as described in Chapter 1, Getting Started.

Follow the steps in this checklist to isolate and resolve printing problems.

1. Does the printer's power come ON?

YES: Go to question 2.

NO: The following could be the problem:

- ◆ The power cable may not be plugged into an electrical outlet.
- ◆ If the printer is plugged into a surge protector, the surge protector may not be connected to power, or it may be switched off.

2. Did the start-up sequence of the control panel end by displaying a Ready (status) screen similar to the one shown in Fig. 2-1 on page 2-2?

YES: Go to question 3.

NO: The following could be the problem:

- ◆ There may be a hardware problem with the printer's internal components. Follow the diagnostic routine on the control panel to determine the problem. Call MacDermid ColorSpan Technical Services as directed by the control panel.

3. Can you send a file from the print server to the printer?

YES: Go to question 4.

NO: The following could be the problem:

- ◆ The cable may not be securely connected between the print server and the printer. Refer to the server's documentation for more information.
- ◆ The cable may be connected to the wrong port on the print server. Refer to the server's documentation for more information.

4. Can you send (print or download) a document from a client computer to the server?

YES: Go to question 5.

NO: The following could be the problem:

- ◆ The connection from the client to the local area network may not be configured correctly. See your system administrator for assistance.

- ◆ The cable between your computer or network and the print server may not be securely connected at both ends. Refer to the print server manual for more information.
- ◆ Your computer may not be working properly. Run an application that you know works correctly and print to be sure.
- ◆ The computer's port may not be working properly. Print to another output device that you know works correctly (and is not connected to the print server) to check this.
- ◆ There may be another error condition reported by the print server.

5. Is the print quality good?

YES: Then the problem is not covered in this checklist. Contact MacDermid ColorSpan Technical Services.

NO: The following could be the problem:

- ◆ **Banding or general poor image quality** — the print-heads may need to be calibrated (see Chapter 4, Calibrating the Printer). One or more ink jets may be clogged or not firing (see "Loading Roll-Fed Media" on page 3-16). The media advance may need to be recalibrated (see "Media Feed" on page 4-6). Verify that the printhead carriage is at the proper height (see "Set the Printhead and Camera Height" on page 5-12). Verify that the service station is calibrated (see page 5-17).
- ◆ **Inaccurate color or under- or over-saturated output** — the wrong color profile may be selected at the print server or RIP. Refer to the documentation that accompanies the print server or RIP.
- ◆ **Inaccurate color or lack of detail** — one or more ink jets may be clogged or not firing (see "Loading Roll-Fed Media" on page 3-16).
- ◆ **Media buckling or media feed problems** — the wrong media could be selected in the Media Wizard (see "Media Wizard" on page 3-44). The printer may not have been installed squarely or securely on the stand (see "Unpacking and Assembly" on page 1-7). The media may not have been loaded squarely (see "Loading Roll-Fed Media" on page 3-16).

- ◆ **Head strike** — if the printhead is striking the media, check how the media is tracking from the supply spool to the takeup spool. The sides of the media should be parallel to the sides of the printer, with no wrinkling or buckling. If necessary, reload the media. See “Loading Roll-Fed Media” on page 3-16 for instructions. Also check the Media Wizard to see whether the correct media is selected (see “Media Wizard” on page 3-44). Head strikes may indicate that the printhead height is too low; see “Set the Printhead and Camera Height” on page 5-12 for instructions. If head strikes become a recur frequently, contact MacDermid ColorSpan Technical Services for an edge retainer that can be attached to the printer.

Warranty Claims

The printer is covered by a manufacturer's limited warranty (part number 0700025), which includes the printheads. The piezo printheads are designed to remain in service for the life of the printer.

All printers that use solvent-based inks are susceptible to printhead clogging. This is caused by the solvent evaporating and leaving behind the pigments. The printer incorporates many automatic and manual features for preventing clogs from occurring, and for recovering ink jets that do become clogged (see "Cleaning Clogged Ink Jets" on page 5-9). The warranty terms require that the maintenance procedures contained in this *User Manual* are followed prior to classifying a printhead anomaly as a "printhead failure."

A printhead failure is defined as any printhead that develops one or more individual jets that do not fire *and* that cannot be recovered or replaced ("mapped out") by the AutoJet or Manual Jet Mapping software when printing in Production Mode. If the jet(s) can be mapped out by the software in Production Mode, the printhead is deemed to be working satisfactorily and is not considered to have a failure.

In the event of a printhead failure as defined above, the cause and/or circumstances that lead to the failure must be identified. The following is a list of causes and/or circumstances that may lead to printhead failure. This list is not considered comprehensive, and any causes and/or circumstances that are not identified in this list will be evaluated on a case-by-case basis.

All printheads submitted for warranty claims will be subjected to failure analysis to confirm the cause of failure. The final determination of warranty applicability will be provided by this analysis.

For more information about warranty claims, contact ColorSpan Technical Services (see page ii for contact information).

Causes that are covered by the manufacturer's warranty:

- ◆ **Manufacturing defect** – when a flaw in materials or workmanship causes a printhead to fail, the failure will be covered by the manufacturer's warranty.

Causes and/or circumstances that are not covered by the manufacturer's warranty:

- ◆ Third party hardware or software
- ◆ Damage caused by accident, abuse, misuse (including damage resulting from head strikes or use of non-approved supplies), misapplication, relocation of product without approved procedures, failure to perform user maintenance as defined in the *User Manual* or contamination of the ink supply due to improper handling of the ink or ink system
- ◆ Printheads which have not been properly maintained as defined in the *User Manual*, and printheads with jet-outs that AutoJet is able to substitute in Production print mode
- ◆ Service (including upgrades and expansions) performed by anyone who is not a ColorSpan Authorized Service Provider
- ◆ Modification of the product without the written permission of ColorSpan
- ◆ Product on which the ColorSpan serial number has been removed or defaced or for which you cannot provide proof of purchase and payment
- ◆ Software (whether embedded in ROMs or other hardware or contained on diskettes or other media), including related manuals and documentation, its quality, performance, merchantability or fitness for any particular purpose

Diagnostics

The printer includes a series of self-diagnostic tests designed to help MacDermid ColorSpan Technical Services solve printer hardware problems. If one of the tests encounters an error, and error message appears, which includes:

- ◆ Error code — always write down this code for future reference by MacDermid ColorSpan Technical Services.
- ◆ Brief description of the error
- ◆ A series of buttons that allow you to respond to the error. In some cases, you can ignore the error or enter a further diagnostic routine. In other cases, you must restart the printer.

During the course of operating the printer, another class of error messages may appear on the control panel. The ATTN (Attention) key blinks on the Ready or Front Page screen when the printer detects an error condition, or potential error condition. When you press this button, the panel displays one or more messages of the following types:

- ◆ **Warnings** — the printer has detected a condition that, if left unaddressed, could result in substandard prints or a condition that will require an action before printing can continue. Any action on your part is optional.
- ◆ **Actions** — the printer has detected an error condition that stopped printing or will prevent printing from starting. You must correct the error before the printer will be ready to print.

The following table describes the Actions and Warnings in detail. The cross-referenced page numbers refer to this manual.

Table B-1. Actions and Warnings

Code, Message	Cause	What to Do
(CS) Capping Station		
A-CS-1- Capping Station	Capping station is raised, and the carriage is not at the capping station.	Lower the capping station to allow the printheads to be capped, and to prevent the carriage from crashing into it.
A-CS-2 - Capping Station	Printheads are capped.	Uncap the printheads.
W-CS-1 - Capping Switch Disabled	The Capping Station Sensor has been disabled.	Enable the Capping Station Sensor in the Printer Settings menu.
(EI) Excess Ink Sensor		
W-EI-1- Excess Ink Sensor Disabled	The Excess Ink Sensor has been disabled.	Enable the Excess Ink Sensor in the Printer Settings menu.
W-EI-2- Excess Ink Sensor Disconnected	The Excess Ink Sensor is disconnected.	Ensure that the Excess Ink reservoir is installed and the sensor is connected.
(HT) Heater		
W-HT-[1 2 3 4 5 6 7 8 9 10 11] - Heater Not Warming	A heater or thermistor may be not functioning on the middle platen heater (1-3), middle platen zone (4), right platen heater (5), right platen zone (6), left platen heater (7), left platen zone (8), preheat heater (9), postheater #1 (10), or postheater #2 (11).	Call your service provider to check wiring, heater, thermistors.
W-HT-[21 22 23 24 25 26 27 28 29 30 31] - Heater Too Hot	A heater has been turned off because its temperature has exceeded its operational specification: middle platen heater (21-23), middle platen zone (24), right platen heater (25), right platen zone (26), left platen heater (27), left platen zone (28), preheat heater (29), postheater #1 (30), or postheater #2 (31).	Wait for the heater to cool. If the temperature does not decrease, unplug the printer, then restart it and lower its temperature setting (page 3-47). Call your service provider to check wiring, heater, thermistors.
W-HT-[40 41 42 43] - Heater Bad Reading	Bad thermister reading detected on the middle platen heater (40-42). or middle platen zone (43).	The thermister is bad, or the heater board or I/O board is malfunctioning, or there is a cable problem.
W-HT-[44 45] - Heater Bad Reading	Bad thermister reading detected on the right platen heater (44) or zone (45).	The thermister is bad, or the heater board or I/O board is malfunctioning, or there is a cable problem.
W-HT-[46 47] - Heater Bad Reading	Bad thermister reading detected on the left platen heater (46) or zone (47).	The thermister is bad, or the heater board or I/O board is malfunctioning, or there is a cable problem.
W-HT-[48] - Heater Bad Reading	Bad thermister reading detected on the preheat heater.	The thermister is bad, or the heater board or I/O board is malfunctioning, or there is a cable problem.

Table B-1. Actions and Warnings

Code, Message	Cause	What to Do
W-HT-[49 50] - Heater Bad Reading	Bad thermister reading detected on the postheat #1 heater (49) or postheat #2 heater (50).	The thermister is bad, or the heater board or I/O board is malfunctioning, or there is a cable problem.
W-HT-100 - Heater Warming	The heaters are warming.	Wait for the heaters to reach their operational temperatures.
W-HT-101 - Heater Cooling	The heaters are cooling.	Wait for the heaters to reach their operational temperatures.
W-HT-[102 103] - Heaters Disabled	The printer is unable to control heater temperatures.	Allow heaters to cool and restart the printer. If it will not cool, unplug the printer. If problem persists, contact your Authorized Service Provider or Technical Services.
(IS) Ink Sensing		
A-IS-[1 2 3 4] - [color] Out of Ink	The ink box indicated is out of ink.	Replace the ink box indicated.
A-IS-[25 26 27 28] - [color] Missing Ink Profiler	The ink color indicated is missing its profiler.	Install the profiler indicated.
A-IS-[31 32 33 34] - Incorrect [color] Profiler	The profiler in the indicated slot is the wrong color or ink type.	Replace the profiler with the correct profiler.
A-IS-38 - Profiler Setup Error	Ink profilers are installed in the wrong docking station positions.	Install the profilers into the correct positions in the docking station.
A-IS-[43 44 45 46 47] - Invalid [color] Profiler	The profiler indicated is invalid.	Replace the profiler indicated with a valid profiler.
A-IS-[61 62 63 64] - [color] Air Sensor Failed	The air sensor on the printhead indicated may be not functioning.	Call your service provider to reposition or replace the air sensor.
A-IS-[65 66 67 68] - [color] Ink Sensor Failed	The ink sensor on the printhead indicated may be not functioning.	Call your service provider to reposition or replace the ink sensor.
A-IS-[71 72 73 74] - [color] Printheads Out of Ink	The printhead indicated is not receiving ink.	Check the ink level in the corresponding reservoir. If its LED is illuminated, replace the ink box. Check the ink tubing for leaks or blockage. Check Attention messages for a failed ink thermister. Check whether the ink filter is full. Call your service provider to check the corresponding ink pump.
A-IS-75 - Ink System Disabled	An error in ink system at startup was detected.	Fix the error and restart printer.
A-IS-[76 77 78 79] - Ink System Disabled	Ambient (room) temp is out of range for operation for K (76), C (77), M (78), or Y (79)	Raise or lower the ambient temperature until it is within operating range (see "Specifications" on page A-2).

Table B-1. Actions and Warnings

Code, Message	Cause	What to Do
A-IS-[80 81 82 83]- [color] Heads Not Loaded with Ink	Printheads for color(s) indicated do not have ink loaded: K (80), C (81), M (82), or Y (83)	Fill the affected printheads with ink. See "Set the Printhead and Camera Height" on page 5-12.
A-IS-[84 85 86 87] - [color] Ink Sensor Disconnected	The on-head ink sensor for the color(s) indicated is disconnected.	Reconnect the ink sensor. Contact your Authorized Service Provider or MacDermid ColorSpan Technical Support for instructions.
A-IS-[88 89 8A 8B] - [color] Air Sensor Disconnected	The on-head air sensor for the color(s) indicated is disconnected.	Reconnect the air sensor. Contact your Authorized Service Provider or MacDermid ColorSpan Technical Support for instructions.
A-IS-[90 91 92 93 94] - [color] Pump Disconnected	The pump indicated is disconnected.	Reconnect the pump and restart the printer.
A-IS-100 - Excess Ink Bucket Full	The excess ink and solvent reservoir below the supply reservoirs is full.	Empty and dispose of the excess ink and solvent according to local regulations.
A-IS-[106]- Ink Counting Not Working	The ink counting mechanism has failed.	Check docking station cables.
A-IS-[10C]- Ink Counting Not Working	The ink counting mechanism has failed.	Restart the printer. If the problem persists, contact your Authorized Service Provider or Technical Services.
A-IS-120 - OHS Read/Write Failure	Failed to communicate with OHS board.	Reseat the profilers and ensure they are inserted correctly. Check OHS board cable connections. If the problem continues after resetting this error, contact your Authorized Service Provider or MacDermid ColorSpan Technical Support.
W-IS-[1 2 3 4] - [color] Low Ink	The ink box indicated is low on ink.	Replace the ink box soon.
W-IS-5 - Cleaning Solvent Low	The cleaning solvent box is almost out of cleaning solvent.	Replace the cleaning solvent box soon.
W-IS-6 - Cleaning Solvent Missing Profiler	The cleaning solvent profiler is not detected.	Install the cleaning solvent profiler.
W-IS-7 - Out Of Cleaning Solvent	The cleaning Solvent reservoir is empty.	Purging will be disabled until you replace the cleaning solvent box.
W-IS-8 - Replace Ink Filters	The reservoir filters need to be replaced.	Replace the reservoir filters. (See "Replace Ink Filters" on page 5-19 for instructions.)
W-IS-9 - Incorrect Cleaning Solvent Profiler	The profiler in the cleaning solvent slot is not a cleaning solvent profiler or is the wrong type.	Replace the profiler with appropriate cleaning solvent profiler.
WS-IS-A - Invalid Cleaning Solvent Profiler	Cleaning solvent profiler is not valid.	Replace cleaning solvent profiler.

Table B-1. Actions and Warnings

Code, Message	Cause	What to Do
LS - Image Sensor		
W-LS-1 - Image Sensor Is Not Operating	The image sensor shutter cable is disconnected.	Connect the image sensor shutter cable and restart the printer.
W-LS-2 - Image Sensor Is Not Operating	The image sensor cable is disconnected.	Connect the image sensor cable and restart the printer.
MD - Media Drive		
A-MD-1 - Media Advance Stalled	The media drive motor has stalled.	Check supply spool for binding, and motor for failure.
(MS) Media Sensing		
A-MS-3 - Media Too Far Left/Right	Media is loaded too far to the left or right.	Reload the media closer to the center of the platen.
A-MS-4 - Media Out	There is no media loaded.	Load media.
A-MS-5 - Media Too Narrow	Media loaded is not wide enough for printing.	Load media that is at least 24 inches wide.
W-MS-1 - Media Low	Less than 10 feet (3 meters) of media remains (roll-fed), or less than 1 foot (30 cm) of media remains (sheet-fed).	Monitor printing and reload media to avoid running out of media during printing.
W-MS-2 - Media Non-Standard Width	Media loaded may cause head strike.	Continue printing or replace media.
W-MS-4 - Media Advance Switch Detected	Media Advance Switch on back of printer was depressed.	Press the Load or Unload button on the control panel to ensure proper tensioning of the supply and takeup.
W-MS-6 - Media Too Wide	Media loaded is too wide to be printed on.	Replace media. See Appendix A, Specifications, for supported widths.
(PC) Printing Calibrations		
W-PC-2 - Media Replaced - Recalibrate	Media advance accuracy may need to be recalibrated.	Run Media Feed Calibration if media type was changed (page 4-6).
W-PC-3 - Head Height Changed - Recalibrate	Change in head height has invalidated calibration.	Run AutoSet (page 4-20).
W-PC-4 - Jets Not Replaced	Not all missing jets could be replaced in the current print mode.	Prime/clean printheads, or choose a higher quality print mode (page 3-4).
W-PC-6 - Uncalibrated Pass Mode	Print mode selected has media advance rate different from the calibrated advance rate, which may cause banding.	Run Media Feed Calibration (page 4-6).
WC-PC-7 - Platen Width Not Known	Measurement was reset or not performed.	Restart printer to measure platen width.
(SM) System		
A-SM-1 - Printer Not Personalized	Defective electronics assembly.	Call Authorized Service Provider for replacement electronics.

Table B-1. Actions and Warnings

Code, Message	Cause	What to Do
A-SM-2 - Invalid Software	Defective software.	Call Authorized Service Provider for updated software.
W-SM-1 - Printer Not Reset For Shipping	Defective electronics assembly.	Call Authorized Service Provider for replacement electronics.
W-SM-2 - Head Voltages Not Set	More than eight heads have default voltages.	Call Authorized Service Provider to set voltages.
(SP) Supply		
A-SP-1 - Supply Too Small	The diameter of the media supply is too small. The printer supports a minimum diameter of 3 inches under tension.	Set the supply tension to idle and continue printing.
A-SP-2 - Supply Too Large	The diameter of the media supply is too large for the capacity of the supply & takeup motors.	Reload the supply with a smaller amount of media (see page A-2 for maximum diameter).
W-SP-1 - Supply Media Out Detection Off	Media-out detection using the supply roll is disabled.	Re-enable Supply Media Out Detection under Printer Settings.
(SS) Service Station		
A-SS-2 - Could Not Move Wipers Home	Service wipers were not able to move to their home position or the service wiper home sensor is not working.	Use "Home Service Wipers" in the Service menu to move the wipers home. If the problem persists, contact your service provider.
(TU) Take Up		
A-TU-1 - Takeup Full	The media takeup spool is full.	Unload the takeup spool and reload media (page 3-25).
A-TU-2 - Takeup Stall	The takeup motor has stalled.	Check for mechanical interference or binding, overloaded spool, out of balance spool, or failure in electronics or motor.
A-TU-4 - Takeup Too Small	The takeup core is too small. Only 3-inch cores can be used.	Unload the takeup, replace the core and collets with 3-inch size core and collets.
W-TU-1 - Takeup Too Large	The media takeup spool is almost full.	Unload the takeup spool and reload media supply and/or takeup (page 3-8).
(VN) VideoNet		
W-VN-1 - VideoNet Connection Not Detected	The printer cannot detect a print server.	Connect cable, turn on server, add printer to server.
(VS) Vacuum Sensing		
W-VS-1 - Vacuum Pressure Too Low	The vacuum pressure of the heads is too low.	Call your Authorized Service Provider.

Table B-1. Actions and Warnings

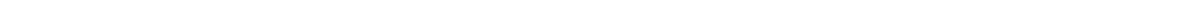
Code, Message	Cause	What to Do
W-VS-2 - Vacuum Pressure Too High	The vacuum pressure of the heads is too high.	Call your Authorized Service Provider.
W-VS-3 Vacuum Pressure Not Recovering	The vacuum pressure of the heads is not recovering after an air purge.	Check vacuum pressure system to ensure it is working properly and check vacuum tubing for leaks.

You can obtain help using your MacDermid ColorSpan product from a variety of sources. This section shows you where to seek help, and introduces you to the support available to registered MacDermid ColorSpan customers.

World Wide Web	http://www.colors span.com/
E-mail	support@colors span.com

If All Else Fails

Call MacDermid ColorSpan Technical Services directly. Be ready to supply the technician with details about your system's configuration and details about the problem, including the exact wording of any error messages that appear. The Technical Services telephone numbers appear on page ii (the copyright page) of this manual.



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