



www.dtgdigital.com

Version 2.0

# Contents

## Important Safety Instructions

*Please read these safety instructions before unpacking and setting up your unit.*

- It is important you follow all the warnings on the printer.
- Use only the type of power source that is indicated on the printer's label.
- All equipment must be connected to grounded outlets. Do not use the same outlet for any other system such as a copy machine or an air control unit that turns on and off.
- Connect the printer to a power outlet that can easily be seen.
- Make sure you do not let the power cord get damaged and don't connect the unit with a damaged cord.
- If you are using an extension cord make sure the power ampere rate does not exceed the cord ampere rate of the printer.
- Keep any items containing magnetic fields, such as electromagnetic devices, away from your printer.
- Keep the printer away from locations with high humidity, vibrations, debris or dust.
- Leave enough space around the printer for proper ventilation.
- Prevent any sudden shocks to your printer, such as dropping the unit.
- Do not leave the printer near heat sources such as radiators, heat vents, or direct sunlight.
- Place the printer on a flat table or on a stable surface that extends around the printer. The printer will not work properly if it is on an uneven surface or tilted or leaning in any way.
- Be careful when transporting the printer – keep it upright (not on its side or upside down) so you do not spill the ink.
- Always turn the printer off before cleaning and clean with a damp cloth only. Do not spill any liquid on the printer.
- Caution: Do not unplug the printer to shut it off. Use the power button instead. Do not unplug the printer until the green power light and the control panel are off.
- Do not block any of the printer's vents or insert anything foreign in its slots.
- Do not try to service the printer yourself, except where described in this manual. If you need service, turn the printer off, unplug it and take it to your DTG Dealer or authorized Agent

*Safety Instructions for Using the Printer and Handling Ink*

- Always keep ink and other consumables out of the reach of children.
- Be careful not to spill ink on your skin or in your eyes. If any ink does get on your skin wash it thoroughly with soap and water. If ink gets in your eyes flush them out immediately with water.
- Do not put your hand in the printer or touch the dampers once printing.
- Do not move the printer head by hand unless undertaking prescribed maintenance, and only with the power turned off.
- Store the ink in a cool dark place.

- If you store the inks in a cold environment and are ready to use them, bring them to room temperature before you use them.

# 1. Introducing DTG Digital Printers

DTG Digital printers are one of the most distinct ranges of inkjet flat bed printers available today. These direct inkjet printers are capable of printing on many different materials, even materials with light and / or uneven surfaces.

Using our specialised textile pigment inks, you can print directly to cotton or cotton blend fabrics, such as those used in T-Shirts. There is a short pre-treatment process required for printing with white ink (such as to dark fabrics), and the only post-treatment is that of heat drying to cure the inks.

There are a number of Digital printers in the DTG range including: the Viper, the Kiosk, the HM1, the Eclipse, the Bullet and the Xpress. The DTG Viper™ is a purpose, ground up built revolutionary printer which incorporates a new White Ink management system on board for reliable white ink prints, a pressurized CMYK ink system for consistent ink delivery, and a conveyor platen drive system for super accurate prints. It also delivers a extra large print area of 17 inches wide by up to 45 inches long (432mm x 1143mm).

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## 1.1 The DTG Viper™

The DTG Viper™ is a textile printing unit based on an Epson Stylus Pro 4880 inkjet printer. It uses standard inkjet technology with DTG TEX Textile Ink to print on any type of cotton / cotton blend garment or fabric material.

Prior to the development of DTG Tex textile inks for inkjet printers, printing on fabric with an inkjet printer used to be quite difficult – standard inkjet inks that are used to print on paper do not stand up to regular washing when printed onto most fabrics. DTG TEX Textile inks have been specifically designed to print on fabrics and garments with only a post treatment of heat needed to set the ink. DTG Tex White Ink has been specifically designed for printing to dark fabrics & garments, and additionally requires a pre-treatment be sprayed to the fabric / garments.

By using DTG TEX Inks, the DTG Viper™ will successfully print on light coloured 100% cotton, 50% cotton/50% polyester blends, 100% polyester and many other natural and synthetic materials. Depending on the image you are printing, 100% cotton will produce the brightest prints, as the colours on 100% polyester and polyester and cotton blends may appear slightly dull.

For darker coloured garments requiring a white ink underbase, your DTG Viper™ will produce excellent results on 100% and low polyester content cotton blends.

There are many applications for DTG Viper™ printing. Besides T-Shirts, it can print on ladies tops, men's polo shirts, tote bags, aprons, towels, caps, mouse pads and bibs. Some products will require pre-treatment with undercoats as well as the application of top coats to protect the print.

The DTG Viper™ with White Ink will require not only the standard Windows printer driver for you computer, but also our specially developed RIP program which "interprets" the image data and converts it to instructions relating to the printing of white ink for the printer. Printer Drivers for Windows and the RIP software have been included in your DTG Viper™ package. You can create your artwork from many graphic applications such as Adobe Photoshop, Adobe Illustrator, Adobe InDesign, CorelDRAW, QuarkXPress, Macromedia Freehand, convert it (where necessary) to a format which can be read by our RIP, and then open that image from within the RIP for printing to your garment or fabric.

## 1.2 DTG TEX Textile Inks

The Epson Stylus Pro 4880 printer, and therefore the DTG Viper™, is based on a CMYK colour process. This process uses blends of 4 colours to make every colour in the spectrum. The colours are Cyan, Magenta, Yellow and Black. Specifically, the Epson Stylus Pro 4880 uses a eight colour process using two shades of Cyan and Magenta, and three shades of Black. There is a primary and a light shade of each of these colours, and the light shades provide an accent to the primary colours giving them a richer blend. The additional light shade of black provides greater definition.

In the DTG Viper™ with White Ink, the light colours are replaced with White Ink. White Ink is a water based titanium dioxide solution. The titanium dioxide is ground into a fine powder and mixed with other binders to allow it to dry and adhere to the pre-treated fabric. Titanium dioxide is what gives the ink its bright white properties, and this brightness gives the coloured ink layer a vibrant and rich colour.

### White Ink Properties and Maintenance

Direct to Garment printers have been plagued with ink clogging issues and general instability since white ink was released in late 2005 to the market. There have been significant improvements in the general stability of white ink in that time, however due to the chemical properties of white ink it still requires more maintenance than the colour inks. Titanium dioxide is a mineral and does not dissolve in liquids. This means that the titanium dioxide will, over a period of time, settle to the bottom of the container (being the ink bottles, ink tubes and / or dampers). Once complete, separation of the titanium dioxide from the binders and other components in the ink cannot be reversed! It is therefore critical that the white ink be gently agitated or swirled daily, or at minimum every 2-3 days. This includes any unused white ink that you may have in stock.

### White Ink Management System (W.I.M.S)

A patented new process called White Ink Management System (W.I.M.S) is available from DTG Digital which aims to reduce White ink clogging and starvation on machine models using Piezo head technology. It does so primarily by providing a continuous, pulsating circulation of white ink through the ink tubes and ink bottle, and by maintaining a positive pressure of the ink through the entire white ink supply system. The pulsating pressure is designed to prevent settling in the dampers due to stagnation. The WIMS is on board your DTG Viper™.

## Using Other Ink Brands

Your DTG Viper™ package included bottles of DTG TEX Textile Inks. This is a specially formulated, water based pigment ink. DO NOT mix other ink brands with your DTG TEX Textile inks. This can create major problems. While we strongly recommend you use only DTG TEX Textile inks, if you do decide to try another brand of textile ink you must flush out the complete ink system using a specially formulated flushing solution available from your DTG Dealer before putting another brand of ink into your system. Mixing inks, even a very small residual amount, may cause severe and permanent clogging of the printing head.

*Never attempt to use a non-water based ink in your DTG Viper™ – even mild solvent based inks may cause irreparable damage to the ink tubes, dampers or even the print head.*

*Your DTG Dealer or Distributor cannot guarantee the performance of your DTG Viper™ if you choose to run any ink other than those supported by DTG Digital in your DTG Viper™.*

# 2 Before you Get Started

## 2.1 Commit to Maintenance

Your DTG Viper™ represents a significant investment, not only of your money but also of your commitment to your new business opportunity with the DTG Viper™.

Whilst the mechanics of the printing unit of the Viper are essentially the same as that of a normal inkjet printer, printing on fabric is not the same as printing on paper. Fabric generates much more dust, printing on fabrics requires a much greater volume of ink, and the white ink pre-treatment can become airborne during spraying and can ingress into the Viper. Each of these factors individually can cause problems with your DTG Viper™, and in combination can be critical to the ongoing operation of the Viper. All is not lost, however! A few minutes of your time each day spent undertaking some basic maintenance tasks on the Viper will ensure it's continued optimal performance. Please refer to the sections within this User's Guide on Preventative Maintenance for further information.

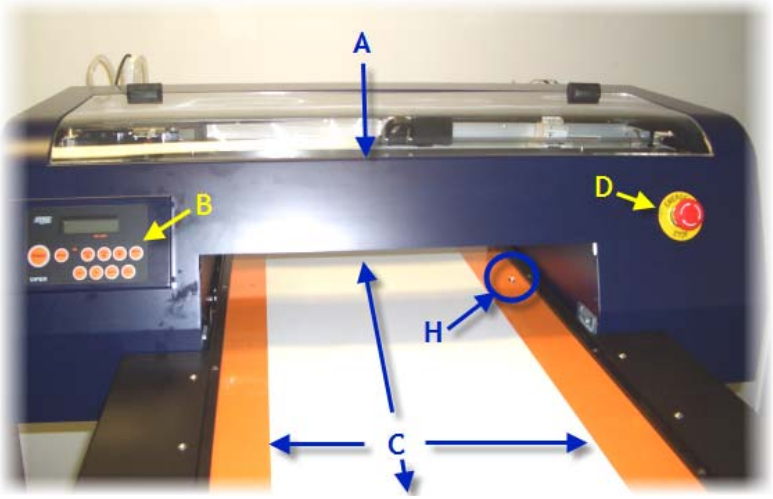
## 2.2 Get to Know your Viper

Starting a new business or adding to your existing product line with the DTG Viper™ is a very exciting, and potentially very profitable time. Don't get too carried away though and start accepting orders before you even have your printer. Allow plenty of time to become familiar with your Viper and to learn not only the basics, but also the variables that can impact on your finished product. These variables include image types, fabric types, your operating environment, garment preparation, and curing of the garment. Thoroughly read this manual, ask questions of your DTG Technician or Distributor, talk to other users (see various internet forums). Be prepared to ruin a few shirts. Be realistic about deadlines when accepting orders and allow yourself sufficient time (and perhaps a couple of extra garments) to complete the order.

# 3 Printer Components

**Names below are used in this User's Guide*

## 3.1 General External




**A. Head Unit**

**B. Control Panel**

**C. Moving Printing Bed (Conveyor)**

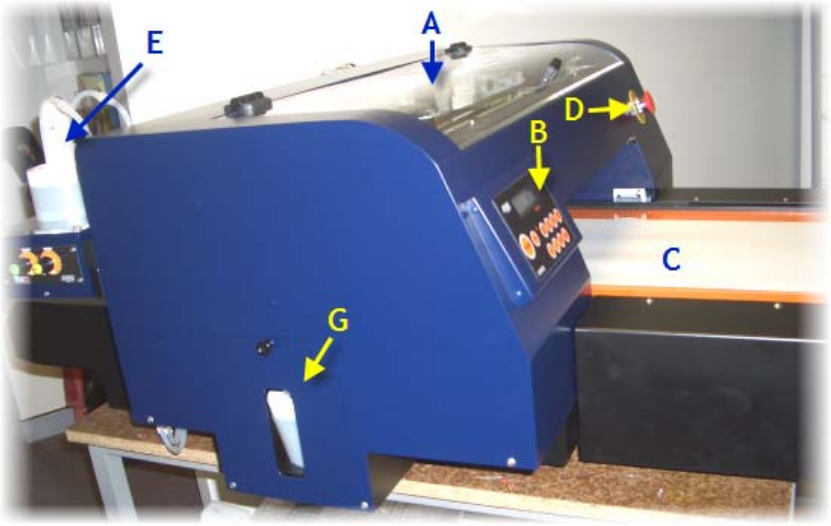
**D. Emergency Stop Switch (E-Stop)**

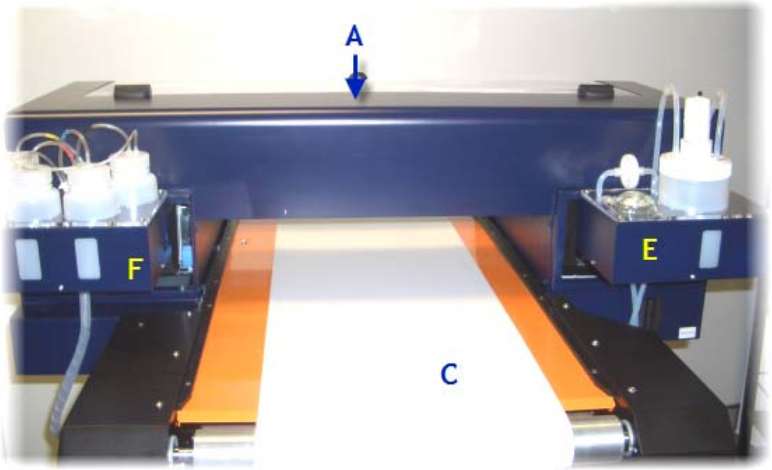
**E. WIMS & White Ink Supply bottle**

**F. CMYK Ink Supply bottles**

**G. Waste Ink Compartment**

**H. Media Sensor**



## 3.2 Emergency Stop Switch

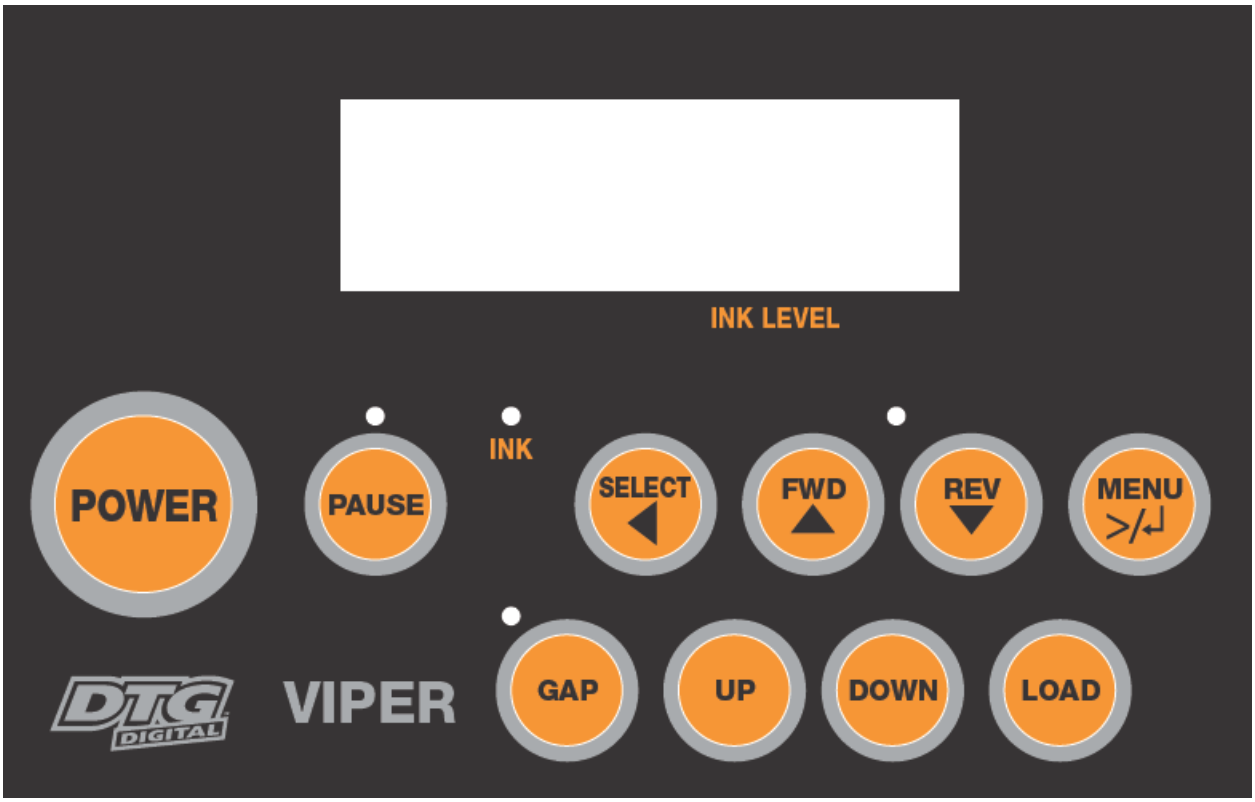
The Emergency Stop button should only be used in an Emergency, for example where there is immediate threat of injury to person or persons by the movement / operation of the DTG Viper.

Engage the Emergency Stop by pushing the red knob forcibly. This will interrupt A/C power supply to the DTG Viper™ and all current printer operations will cease.


*When the Emergency Stop Switch has been engaged, it is important to press the Power Button on the Control Panel (see below) if the Printing Head Unit was on prior to activating the Emergency Stop Switch. This will ensure that the Printing Head Unit is properly powered down upon restart of the printer.*

To release the Emergency Stop Switch, twist the red knob in the direction indicated by the arrows.

## 3.3 Control Panel




Before you attempt to print anything with your DTG Viper, you need to understand the Control Panel, and what it's buttons and lights mean:

The Control Panel is located on the front left hand side of the printing head unit, and allows control of the movement of the Moving Printing Bed (forward / reverse & up / down). It also has an LCD display and allows access to various menu options for the printing Head Unit. In addition, there are LED indicators for the status of the Printing Head Unit and Moving Printing Bed.

### Buttons


The Power button turns the Printing Head Unit on or off. Note that the main A/c power to the base unit must be connected to the A/C Power Port and switched on at the A/C Power Switch in order for this button, and in fact most functions of the Control Panel to be operable.


The Pause Button has a number of functions:

- Stops printing temporarily. Use the pause button if a print job needs to be stopped (where it is not an emergency)
- Restarts printing if pressed when the printer is paused.
- Clears a print job in the printer's memory if pressed and held for 3 seconds (Reset)
- Returns the printer to the READY state when the printer is in Menu mode.


The Select button is used to select a "paper source" ( Roll Auto Cut On / Roll Auto Cut Off/ Sheet). *Note that this selection should always be Roll Auto Cut Off for normal operation of the DTG Viper™*. It also returns to the previous level menu when pressed in Menu mode.


The FWD (Forward) button feeds the Moving Printing Bed in the forward direction (towards the rear of the printer) only as much as the Moving Printing Bed has been fed by using the reverse button. This button also changes a setting in reverse order when selecting settings in Menu mode.


The REV (Reverse) button feeds the Moving Printing Bed in the paper in the reverse direction (towards the front of the printer). It also is used to change settings when selecting settings in Menu mode.


The Gap On/Off button, when pressed, will turn on or off the Gap Sensor in the Printing Head Unit. The Gap Sensor uses optical sensor to sense objects (such as a wrinkle in a garment) that are in the path of the Print Head. The sensor, when on, will operate during the FWD, REV, LOAD and printing processes to detect any part of the garment or garment platen (or other foreign object) that may intrude upon the pre-defined gap between the print media and the Print Head. This is to ensure that the Print Head will not strike anything during the printing process. Please refer to Control Panel Lights section below for further information regarding the various states of the Gap Button / Light Indicator.

*The Printing Head must not hit the garment or the Platen (or any other foreign object). If it lightly brushes the garment you will have to do a head cleaning before the next print. If it even lightly brushes against pre-treated fabric, the pre treat may seal the ink in the head, and you will need to immediately perform several head cleans – and potentially have to replace the Print Head with a new one. If the Print Head hits the garment itself or other object with some force, you may have to replace the Print Head with a new one.*

It is therefore strongly recommended that you do not turn off the Gap Sensor at any time.

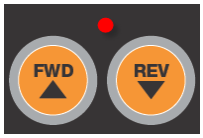

The UP button, when pressed, will raise the Moving Printing Bed (and therefore any media that is positioned on it) until the button is released, the upper limit is reached OR until the Gap Sensor Beam is triggered (which will automatically stop the upward movement of the Moving Printing Bed.


The DOWN button, when pressed, will lower the Moving Printing Bed (and therefore any media that is positioned on it), until the button is released or the lower limit is reached.


The Load button, when pressed, will move the Moving Printing Bed towards the rear of the printer (Forward) until the Media Sensor is triggered (usually by a platen). Once triggered, the bed will roll towards the front of the printer (Reverse) for a small movement, then forward again until the platen edge is resting against the Media Sensor. These movements are very precise, and if the platen is loaded correctly, provide an accurate and repeatable starting position for your prints.

## Lights

| Light | Description |
|---|---|
|   Pause Light | |
| solid green | The printer is in pause mode. |
| flashing green | The printer is printing.<br>The printer is cleaning the print head. |
| light off | The printer is ready to print data. |
|   Ink Light | |
| solid red | The ink chip count has reached it's limit & requires resetting.<br>There is an error with the ink chip that requires resetting.<br>The maintenance tank chip count has reached it's limit & requires resetting. |

| | |
|---|---|
| flashing red | The ink chip count is approaching it's limit & requires resetting.<br>The maintenance tank chip count is approaching it's limit & requires resetting. |
|  Paper Light | This light will not be active during normal operation of the DTG Viper™ |
| Pause, Ink & Paper lights all flashing | Printer needs service - contact your authorized DTG Distributor |
|  Gap Light (Green) | A Green Gap Light indicates that the Gap Sensor is on in "auto" mode. In this mode, the Printing Bed (and therefore printing media on the Printing Bed) will be lowered automatically if the Gap Sensor is "triggered" by something on the Printing Bed – this may be a wrinkle in the fabric or a foreign object that has been left on the Printing Bed by mistake. This automatic lowering of the Printing Bed minimizes the risk of the Print Head striking any object during the print process. There is considerable risk of permanent damage to the Print Head if it should strike anything during the printing process. |
|  Gap Light (Amber) | An Amber Gap Light indicates that the auto-lowering of the Print Bed in response to the Gap Sensor has been disabled. In this mode, the Printing Bed will not lower automatically as it does in "auto" mode. The Printing Bed can be lowered manually by the Down button, however the Up button is disabled in this mode to lessen the risk of the Print Head striking any object during the print process. |
|  Gap Light (Red) | A Red Gap Light indicates that the Gap Sensor is "triggered" |

## Panel Messages

The messages on the printer's LCD show the printer's current status or notify you of errors. The following table lists the status messages. For error messages, see "Error messages" on page .

| Message | Description |
|---|---|
| READY | The printer is ready to print. |
| PRINTING | The printer is processing data. |
| PLEASE WAIT | Wait until READY appears. |
| PAUSE | The printer is paused. |
| PRESS PAUSE BUTTON | Press the Pause button. |
| CHARGING INK | The printer is charging the ink delivery system. |
| RESET | The printer is being reset. |
| POWER OFF | The printer is being turned off. |
| CLEANING | The printer is cleaning the print head. |

## Menu Settings

There will be, on occasion, a need to use various of the available menu options. Note that many of the menu options available are preset for the DTG Viper and should not be changed. This section gives an overview of the menu setting procedure. Further sections will describe specific menu functions in detail.

### Basic Menu Setting Procedure

This section describes how to enter Menu mode and select settings with the buttons on the control panel.

*Note:*

*Press the pause* 

*button whenever you want to exit the printer menu and return to the READY state.*

*Press* 

*to return to the previous menu.*

***1.** Enter Menu mode*

Make sure that READY appears on the printer's LCD, and then press the Menu 

button to enter the printer's menu system.

***2.** Select a menu*

Press  or  to select a sub menu.

***3.** Enter the sub menu*

Press  to enter the selected sub menu. The first menu item appears on the printer's LCD.

***4.** Select a setting*

Press  or  to select a setting.

***5.** Set the setting*

Press  to set the selected setting. The first item appears on the printer's LCD.

***6.** Select an option*

Press  or  to select an option for the setting.

*7. Set the option*

Press  to set the selected option. If the parameter is for execution only, press  to execute the function for the setting.

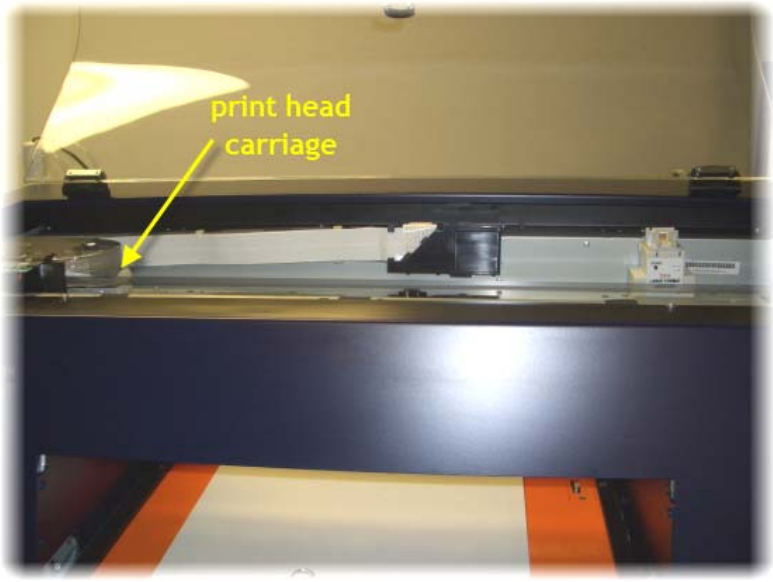
After execution, the printer exits the printer menu and returns to the READY state.

*8. Exit the Printer Menu*

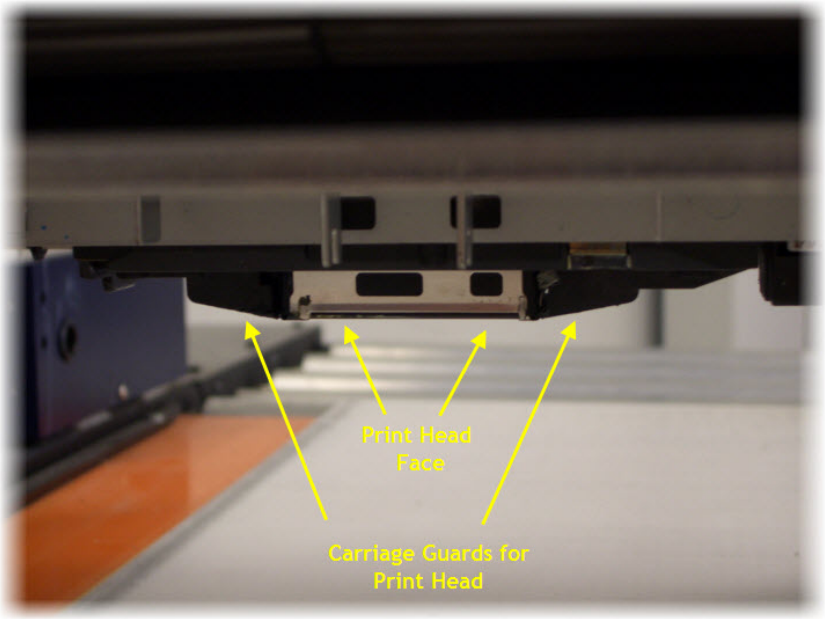
Press the pause  button. The printer returns to the READY state.

## 3.4 Printer Head & Carriage

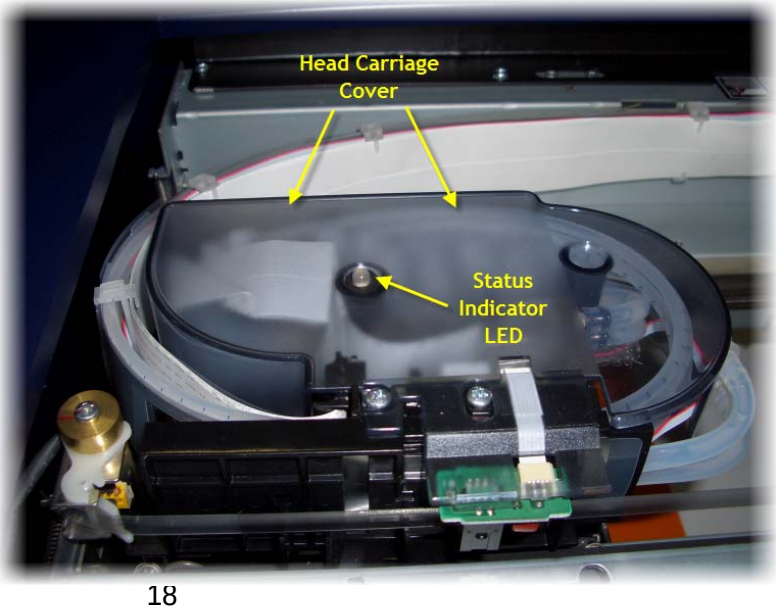
The Head Unit contains the components described below:



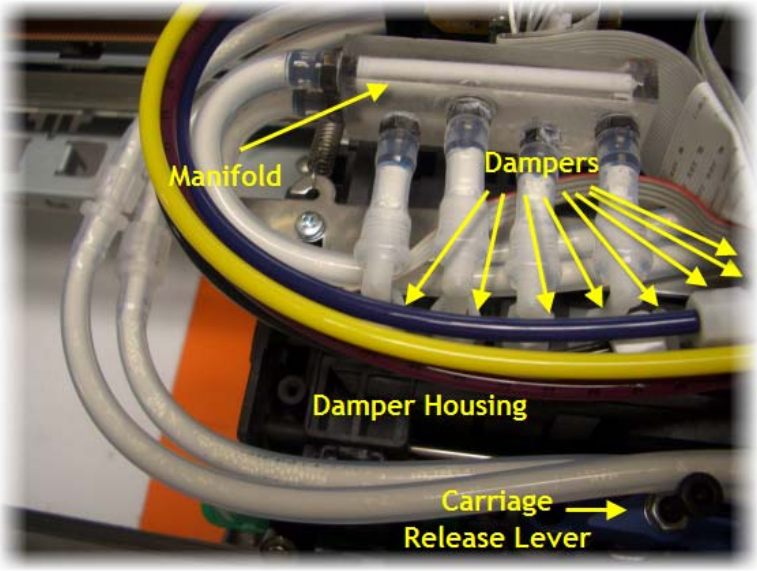

The Print Head itself is seated within the Print Head Carriage, which during normal operations travels right & left allowing the print head to deposit ink across the printing media.




The printing face of the Print Head protudes from an opening in the base of the Print Head Carriage.



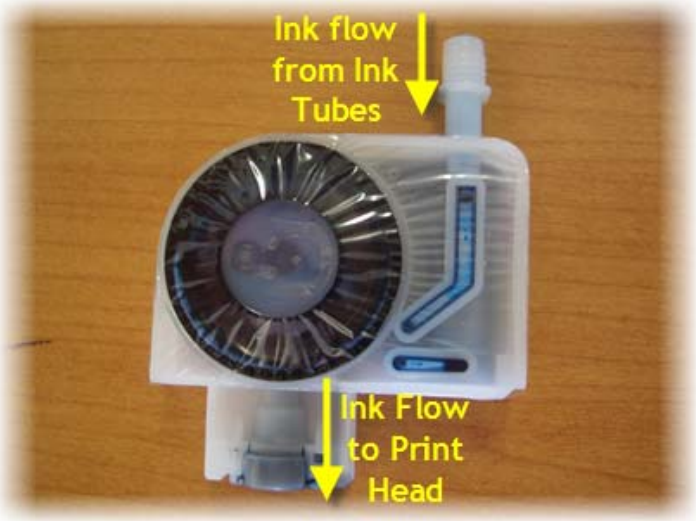
The Carriage itself has a grey translucent cover which secures the ink tube assembly and dampers. In the centre of this cover is the Viper Status Indicator LED




This image shows inside the Print Head Carriage with the Carriage Cover removed. The ink tubes from the printer CMYK ink bottles each connect to L shaped tubes which in turn each connect to a damper contained within the Print Head Carriage. Each Damper sits on one of 8 nipples or spikes which feed ink into the Print Head. Dampers are a consumable item which normalize the flow of ink to the print head and also act as a primary ink filter.

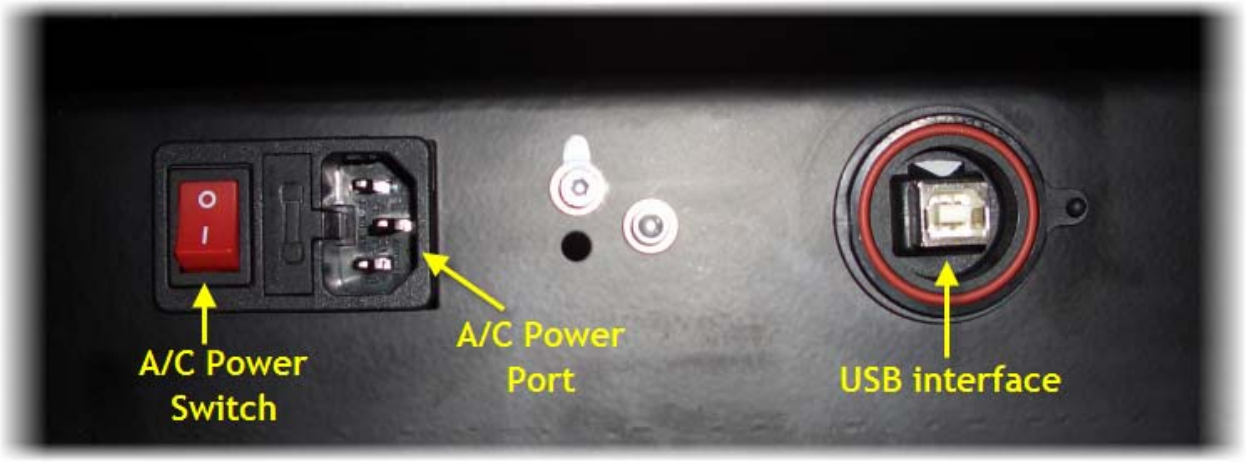
The ink tubes (feed & return)from the printer white ink bottle each connect to one end of the WIMS manifold, which in turn connects to 4 dampers also contained within the Print Head Carriage. As with the CMYK dampers, each of the four White Ink Dampers sits on one of 8 nipples or spikes which feed ink into the Print Head.

This image shows a Damper and describes the flow of the ink from the ink tubes through the damper and to the Print Head.



## 3.5 Power & Communications Ports

The Power and Communications Ports are located at the rear of the main Viper base unit.



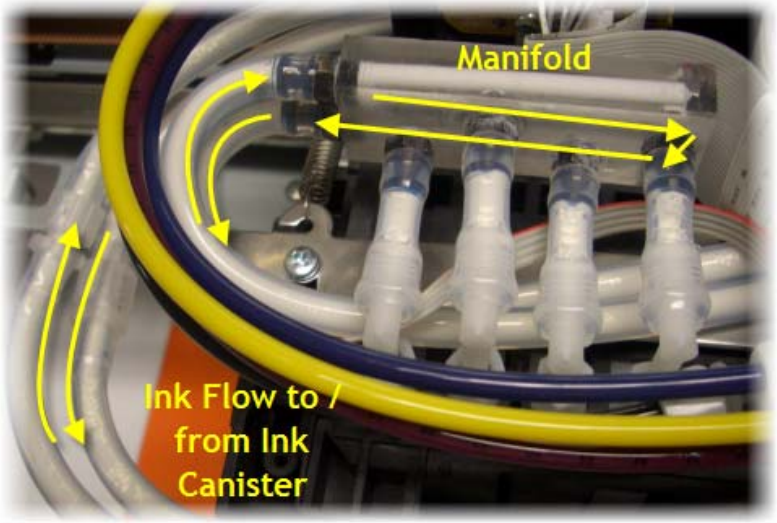
## 3.6 WIMS (White Ink Management System)

Direct to Garment printers have been plagued with ink clogging issues and general instability since white ink was released in late 2005 to the market.

A patented new process called White Ink Management System (W.I.M.S) is built into your DTG Viper™ and aims to reduce White ink clogging and starvation on machine models using Piezo head technology (such as the Viper). It does so primarily by providing a continuous, pulsating circulation of white ink through the ink tubes and ink bottle, and by maintaining a positive pressure of the ink through the entire white ink supply system. The pulsating pressure is designed to prevent settling the dampers due to stagnation.



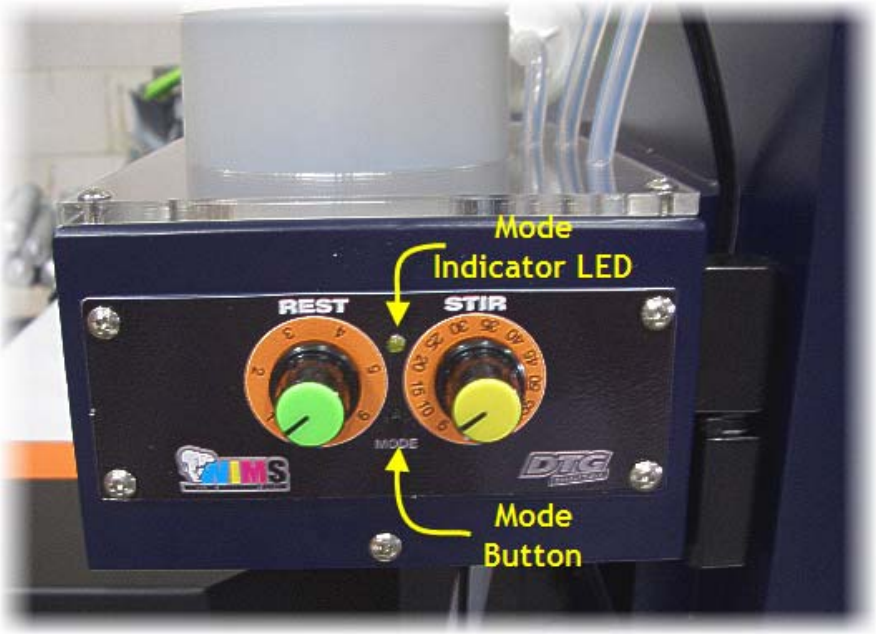
These photographs show a WIMS model with arrows to indicate the ink flow when the WIMS unit is cycling.



In earlier models of the DTG Viper, the WIMS circulation pump runs continuously whilst the printer is supplied with mains power. The operation of the stirring motor is regulated by the setting of the dials on the front of the WIMS Control Panel.

In newer models of the DTG Viper, the Agitation on Demand system has been implemented in order to maximise the pump life (see below).

## 3.7 WIMS Control Panel




### REST Dial

The REST Dial allows setting of the period of time (increment in hours) that the stirring motor & paddle will "rest", or not stir the ink. Settings are in effect when the unit is powered on, to change the settings you will need to turn the power to the unit off first, change the dial setting and then re-power the unit.

### STIR Dial

This dial allows setting of the period of time (increment in minutes) that the stirring motor & paddle will stir the ink, in between rest periods. Settings are in effect when the unit is powered on, to change the settings you will need to turn the power to the unit off first, change the dial setting and then re-power the unit.

### Mode Indicator LED

During normal operation of the WIMS, this indicator will not be lit. It may flash or glow solid during other various modes of operation as described below.

### Mode Button

The WIMS will always start in STIR mode, for the duration of time (minutes) as indicated by the STIR dial when power is provided to the WIMS unit. Once the STIR time duration has been reached, the WIMS unit will go into REST mode for the period of time as indicated by the REST dial (hours).

*Diagnostic Mode:* By pressing & holding the Mode button as the WIMS unit is powered up, the WIMS unit is set to diagnostic mode. As the motor / paddle stirs, the Mode indicator LED will flash for the number of minute increments as shown on the STIR dial indicator. When the motor / paddle rests, the Mode Indicator LED will flash for the number of hour increments as shown on the REST dial indicator. This mode is useful to confirm the calibration of the dial indicators. For example – referring to the photograph above of the control panel, the REST dial is set between 2-3 hours (2 time increments), and the STIR dial is set to approximately 15 minutes (3 time increments). In Diagnostic Mode, the motor will stir for approximately 3 seconds, and the Mode Indicator LED will flash 3 times (representing the 3 time increments for stirring) . The motor will then stop stirring for approximately 2 seconds, and the Mode Indicator LED will flash 2 times (representing 2 full rest time increments).

*Manual Override:* Whilst the WIMS unit is in normal operating mode, if you press & hold the Mode Button for 2-3 seconds, it will go into manual override – ON mode, and the motor will continuously stir. Whilst in this mode, if the mode button is pressed & held for 2-3 seconds, the unit will go into manual override – OFF mode, and the unit will stop stirring. To reset to normal operating mode, power must be disconnected & reconnected to the WIMS unit.

## 3.8 AOD system.

The AOD (Agitation On Demand) system is designed to maximize pump and stirrer life whilst ensuring that the ink delivery is in optimum condition at all times. The AOD sender board monitors the active state of the printer. When the printer has been inactive for approximately 7 minutes it enters a stand-by mode and the AOD allows the timer setting in the WIMS to manage not only the ink stirring, but also the ink circulation. If a print job or any other action requiring the printer engine to function is started the AOD will sense this and over-ride the WIMS timer causing the WIMS circulation to activate.

# 4 Getting Started

- Read all instructions through thoroughly, (including the safety instructions), before unpacking your DTG Viper™ unit, and then follow the relevant directions as you prepare your unit for printing.
- Prepare an area to set up your DTG Viper™ unit.
- Unpack and set up the unit as per the instructions in Section 5.1 of this manual.
- Fill the ink bottles as per the instructions in Section 5.2 of this manual.
- Install the Printer Drivers and the RIP software. Go to www.Epson.com for more information on the Epson Stylus Pro 4880, and to download complete printer manuals, the latest drivers and driver fixes for use with your DTG Viper™.
- Read Section 6.4 on printing t-shirts. This section explains what the control panel buttons and lights are for, the basic steps to printing on a t-shirt and how to cancel a print job.
- Section 8 covers general maintenance and problems you may encounter with the printing process.
- Section 9 is a troubleshooting guide

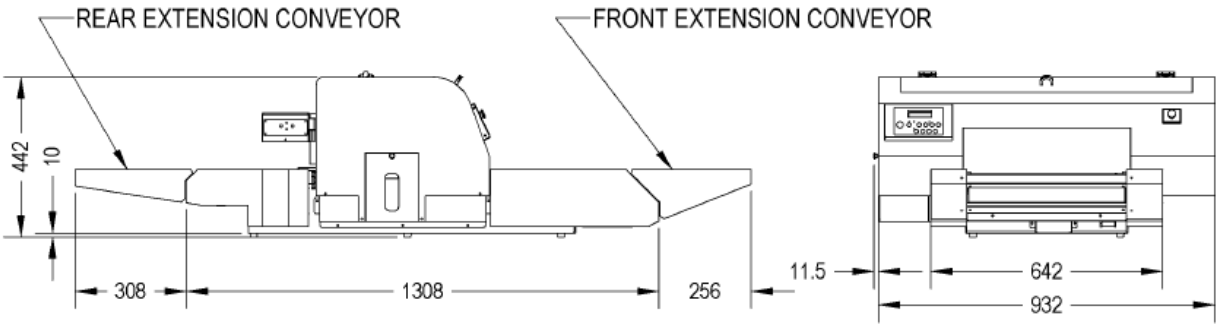
# 5 Printer Set Up

*Please Note: Keep all packaging, holding fixtures and instructions for the DTG Viper™ as you will need them if you have to transport your system anywhere or to return it for repair. There is a section in the back of this manual on transporting your printer. Please ensure you read and follow these instructions.*

## 5.1 Unpacking and Positioning the DTG Viper™

Please read the following directions through before unpacking your DTG Viper™:

- Prepare a work area suitable for using the DTG Viper™. Allow extra room for your computer, replacement inks and space to work. See diagram below for approximate dimensions of the unit and minimum workspace area required. Dimensions are in millimeters.




- Prepare a work area with a **solid work table** that will not vibrate when using the DTG Viper™. Allow extra room for your computer, replacement inks and space to work. Note that you will require access to the rear of the printer in order to perform maintenance functions.

- Carefully uncrate the printer and gather all spares and additional components. DO NOT lift the printer by the conveyor, but rather from beneath the main body of the printer.

- Place the printer on the work table which should be leveled first.

- The unit must be kept away from direct sunlight, dusty areas, excessively high humidity, strong magnetic forces and direct airflow which can dry out and clog the printing heads. It is highly recommended that the unit be kept in a dust free, air-conditioned environment, with temperatures no less than 5° Celcius (41°F) and no more than 30° Celcius (86°F) with humidity levels between 40 and 70% at all times.

- Provide a separate room for the spraying of pre-treatment to the garments prior to printing. If a separate room is not possible, you must allow a minimum of 5m between the spray station and the DTG Viper, and ensure that forced extraction of the pre-treat vapour is carried out. Failure to adhere to these recommendations will result in erratic print quality and the need for numerous head cleans both before & during printing. This erratic behaviour is likely to worsen until the print head fails and has to be replaced.

- Protect any carpet or floor covering with mats or old carpet as there is a risk of spilling ink when you refill the printer ink bottles.

- Place the DTG Viper™ close to the heat source that you are using to cure the ink so that you have a smooth workflow, but ensure that heat does not radiate directly on to the DTG Viper™. If you have more than one DTG Viper™, place them around the heat source or close to it for operational efficiency.

- Remove any packaging covering the unit. Check the unit carefully for shipping damage. If you find any obvious damage please contact the freight carrier immediately to arrange a freight inspection.

- Remove any tape holding the Clear Perspex Printing Head Unit Cover closed.

- Open the clear perspex Head Unit cover and unlock the print head carriage by pulling the green tab to the right. Do not remove the tab.

*Do not push the green tab down or you may break it.*

- Remove any tape holding the waste ink bottle in place (in the waste ink compartment).

- Fit the Front & Rear Extension Conveyors

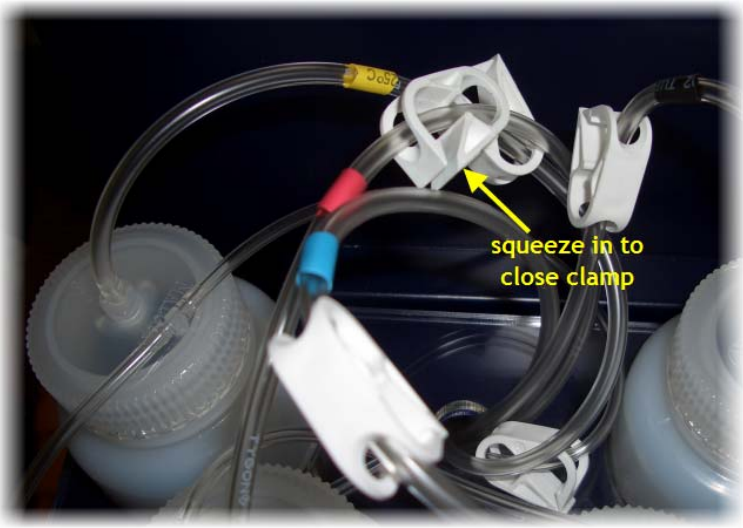
- Connect the power supply cable and note (but do not connect) the printer USB interface cables with your PC. Do not use an interface cable that is longer than 2 metres. Do not use a USB Hub or USB extension cable as erratic prints may result.

- DO NOT turn the printer on just yet.

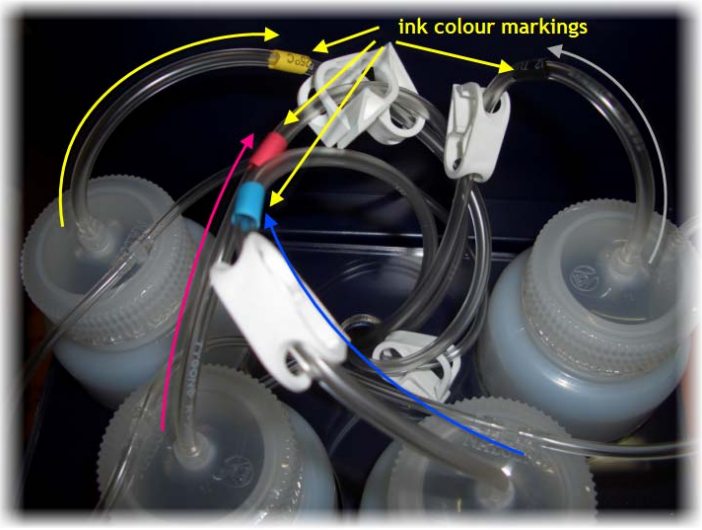
## 5.2 Filling Ink Bottles

### Pour Inks into the Ink Bottles:

- Gently turn the White Ink bulk supply bottle up, then down several times to re-mix any pigment that may have settled out.
- Release any ink tube clamps that are closed.




- Remove the lids of the bulk ink supply bottles.
- Remove the lids from the ink bottles and canisters at the rear of the Head Unit, and slowly pour the ink from the bulk supply ink bottles into the corresponding printer ink bottles and canister.




- Be sure to match the markings on the printer ink tubes to the ink:

C= Cyan (blue) = Cyan Ink

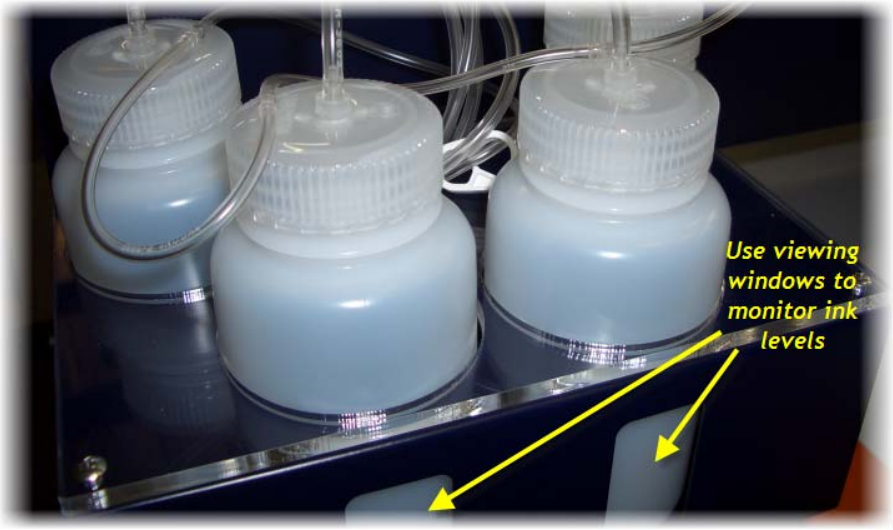
M= Magenta (pink) = Magenta Ink

Y= Yellow = Yellow Ink

BK= Black = Black Ink

Large Canister = White Ink

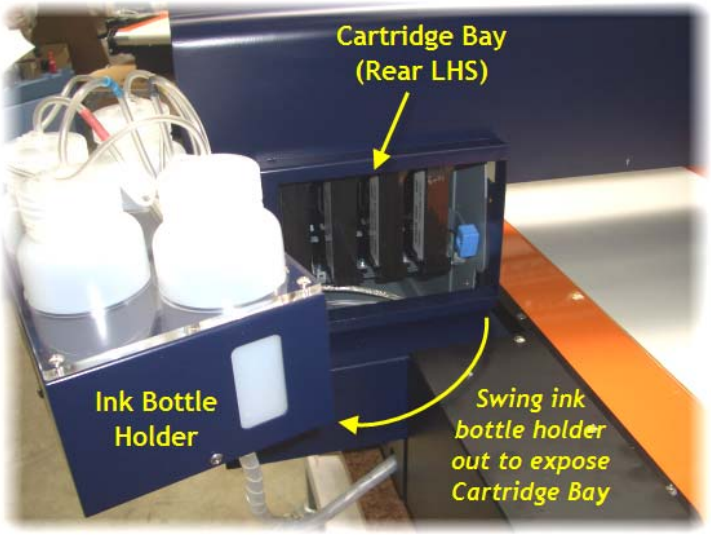
*Pour the ink gently so as to avoid creating air bubbles when pouring the ink. If bubbles are formed then do not run the printer until the majority of bubbles have settled (leave to settle for an hour or so).*




Ink levels in the printer ink bottles should be maintained at ½ to ¾ full at all times. In particular, the White Ink level must never be let go below 40%, doing so could cause the ink tubes to draw air into the system, requiring a re-charge of inks to re-fill the ink tubes. It is recommended that the inks be topped up each night as part of the shut down maintenance routine, however levels should also be monitored & corrected during periods of high productivity on the printer.

## 5.3 Installing "dummy" Cartridges

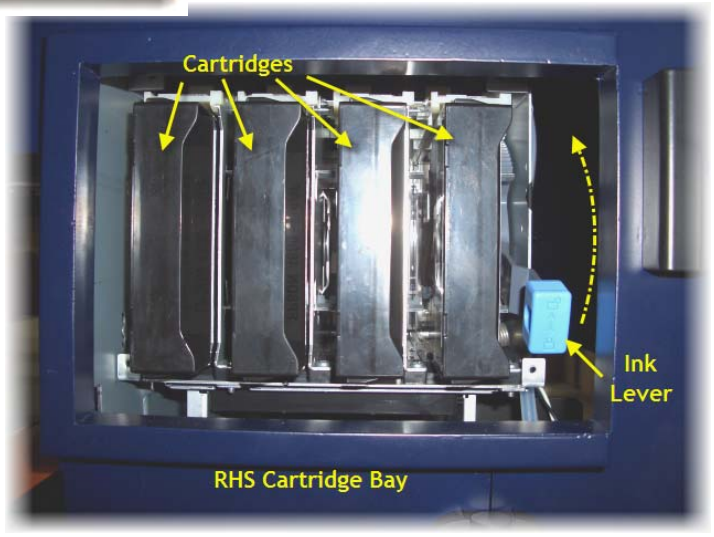
As discussed previously, your DTG Viper™ is based upon the Epson Stylus Pro 4880 printer. This standard printer uses 110 or 220 ml ink cartridges instead of the dampers and bulk ink system used in the DTG Viper™. The standard printer uses micro-chips on the ink cartridges to "count" ink drops that pass through the print head to determine when a particular cartridge is getting low on ink. The printer will then flash the corresponding cartridge indicator on the Control Panel as a visual warning to the user. This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. Neither the Epson 4880 printer nor the DTG Viper™ can tell how much ink is actually in the bulk ink bottles of the DTG Viper™. "Dummy" cartridges are provided with your DTG Viper™ purely to satisfy the firmware requirement that cartridges are installed.




These cartridges should be installed into the correct slots in the left & right cartridge bays which are located behind the ink bottle & WIMS holders at the rear of the printer (the ink bottle & WIMS holders are hinged and swing outward to reveal the cartridge bays). Please note that your dummy cartridges may be black as pictured here, or a translucent white colour.

To install cartridges, raise both the left & right ink levers to unlock the cartridge bays, and insert the cartridges into the correct slots. Refer to the picture here for the correct direction for insertion. Once cartridges have been installed, lower the ink levers to lock the cartridges in place.

*If you can't insert the cartridge smoothly, you may have the wrong cartridge. Check the cartridge colour against the order listed below. If the ink light remains on after installing the cartridge, it may not be inserted fully.*




The proper cartridge order, when facing the rear of the printer is as follows:

- Left Hand Cartridge Bay: Photo Black, Cyan, Vivid Magenta,Yellow
- Right Hand Cartridge Bay: Light Black, Light Cyan, Vivid Light Magenta, Light Light Black

Note that ink consumed during printing, head cleans and ink charges all contribute to the ink drop count, once the count reaches the limit for the installed cartridge(s) it will signal warnings & will require cartridge reset. These issues are discussed in detail in Section 0.

## 5.4 Load White Ink via WIMS

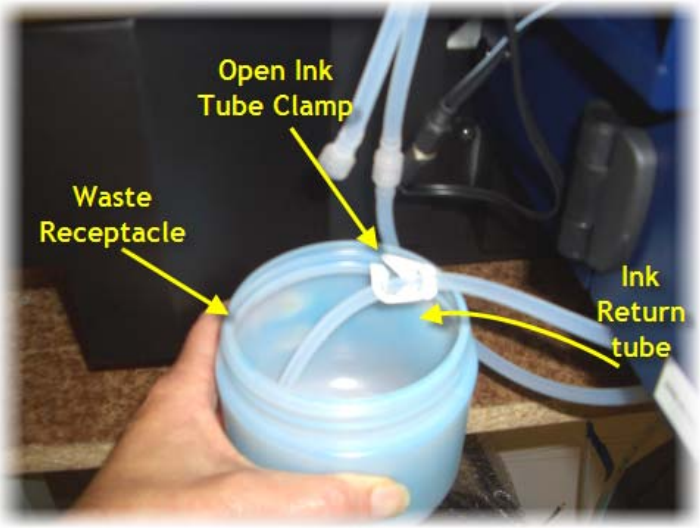
When filling the White Ink for the first time or after cleaning the ink supply system (described below, Section 8.13), certain procedures must be followed to ensure adequate "priming" of the white ink delivery system:

Ensure that the white ink canister is filled with white ink.

Your DTG Viper™ is shipped with a small amount of shipping fluid in the ink supply system. It is important to purge this fluid from the WIMS upon initial fill of white ink to the WIMS system:

- Disconnect the fittings on the white ink return tubes of the WIMS as shown and place the end of the return tube into a waste receptacle. Ensure that the clamps on the ink tubes are open.






- Switch on the mains power to the printer (do not press the Power button on the Control Panel), and connect the power socket for the WIMS unit to start the pump that circulates the White Ink through the WIMS.
- Keep the power socket for the WIMS unit connected until white ink has circulated through the WIMS, pushing the shipping fluid through to the waste receptacle. Once a small amount of White Ink has also been purged to the waste receptacle, disconnect the power socket for the WIMS Unit to stop the circulation.
- Clamp the White Ink Tubes closed (to prevent ink drippage) and reconnect the fittings on the WIMS return tube.
- Unclamp the White Ink tubes and reconnect the power socket for the WIMS to continue White Ink Circulation. The White Ink should be allowed to circulate for 15-20 minutes prior to powering on the printer Head Unit.

## 5.5 Installing & Using Printer Drivers

**Before starting this part of the set up process, we recommend you turn OFF all Screen Savers when installing your software and printing to your DTG Viper™. If you have any problems installing the Printer Drivers or the RIP software, please call the Support Department at your DTG Agent / Dealer for help.**

A printer driver is a piece of software that converts the data to be printed to the form specific to a printer, and it is usually supplied with a new printing device.

In your DTG Viper™ package you received the Epson Stylus Pro 4880 Printer Driver CD. You need to install the driver CD to operate the printer.

At some time in the future you may need to update your printer driver and you can do this by logging on to the Epson website: http://tech.epson.com.au or www.epson.com. Follow the links to the Downloads / Printer Drivers section where you can download the latest drivers.

The Epson Stylus Pro 4880 Printer Driver includes standard maintenance routines for nozzle checks, head cleaning, and head alignment, incorporated into the software. These maintenance routines are essential to the optimal performance of your printer.

This part of the set-up of your DTG Viper™ requires that the Head Unit be powered on. Do so by pressing the Power Button 

of the front control panel (assuming that the main power supply to the Printer is still switched on).

### To Install Printer Driver for Windows

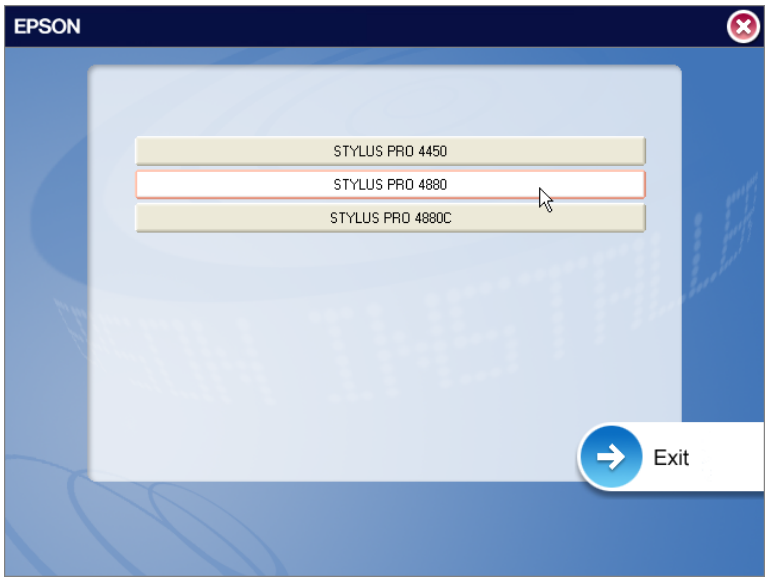
- Make sure your computer and printer are turned on but the printer is NOT CONNECTED to your computer.

Note: If you see a Found New Hardware Wizard screen, click Cancel and disconnect the USB cable.

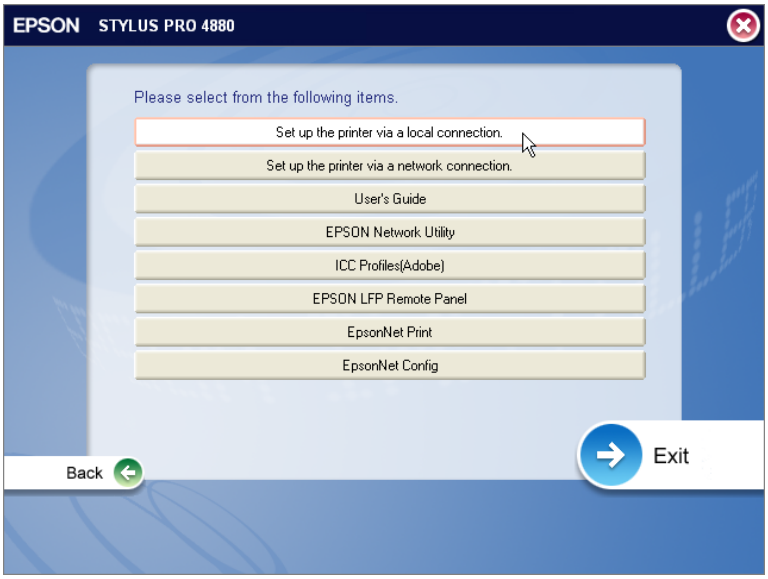
- Insert the Epson Stylus Pro 4880 printer CD.

**Note: With Windows Vista, if you see the AutoPlay window, click Run Epsetup.exe. When you see the User Account Control screen, click Continue.**

- Click on Stylus Pro 4880



- Choose "Set up the printer via a local connection"




- Read & Accept the license agreement – the installation program will copy necessary files to your computer

**Note: If you see message asking if you want to install or run various installation programs, select Continue, Continue Anyway, or Install this driver software anyway.**

- When you see a window asking you to connect the printer, connect the USB cable.

**With Windows XP, if you see a Found New Hardware Wizard screen after you connect the printer, select No, not this time and click Next. Then click Next again.**
**If installation doesn't continue after a moment, make sure you are securely connected and have turned on the printer.**

- Click OK to the message that drivers have been installed successfully
- When you're done, click Exit and remove the CD.

## To Install Printer Driver for MacIntosh

**Note: the RIP software provided with your DTG ViperTM may not support the MacIntosh platform – refer to your RIP software guide for further information.**

- Make sure your Macintosh and printer are turned on.
- Connect the USB cable.
- Insert the Epson Stylus Pro 4880 printer CD.
- If necessary, double-click the Epson CD-ROM desktop icon.
- Double-click the  Epson icon.

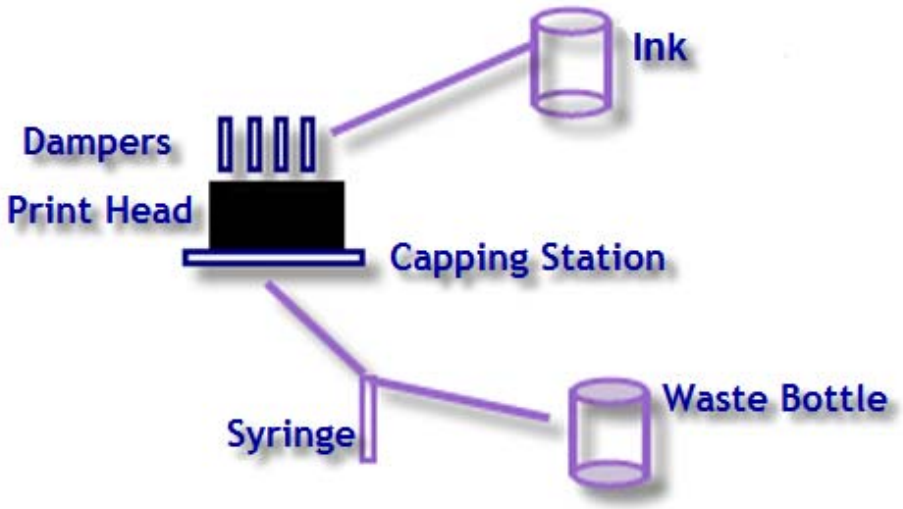
- Click Custom, and select only the Printer Driver & Utilities and the User's Guide and Network Guide Options
- Click Install.
- Follow the on-screen instructions to install all the necessary software and manuals.
- Open the Applications folder, then open the Utilities folder. Open the Printer Setup Utility and click the Add icon at the top of the printer list window. (If you see a message that you have no printers available, click Cancel).
- Select the Stylus Pro 4880 and click Add.
- Close the printer list and any open windows, then eject the CD.

## 5.6 Drawing Ink from the Ink Bottles to the Print Head

In order to print from the DTG Viper, you will first need to draw ink from the Ink Bottles through to the print head. This process is also referred to as Charging the Print Head (with Ink). The WIMS circulation pump will have delivered White Ink through to the manifold which sits above the dampers, and the pressure pump for CMYK will have partially pushed the CMYK inks up the ink tubes towards the Print Head. However, the ink must be drawn into & through the print head.

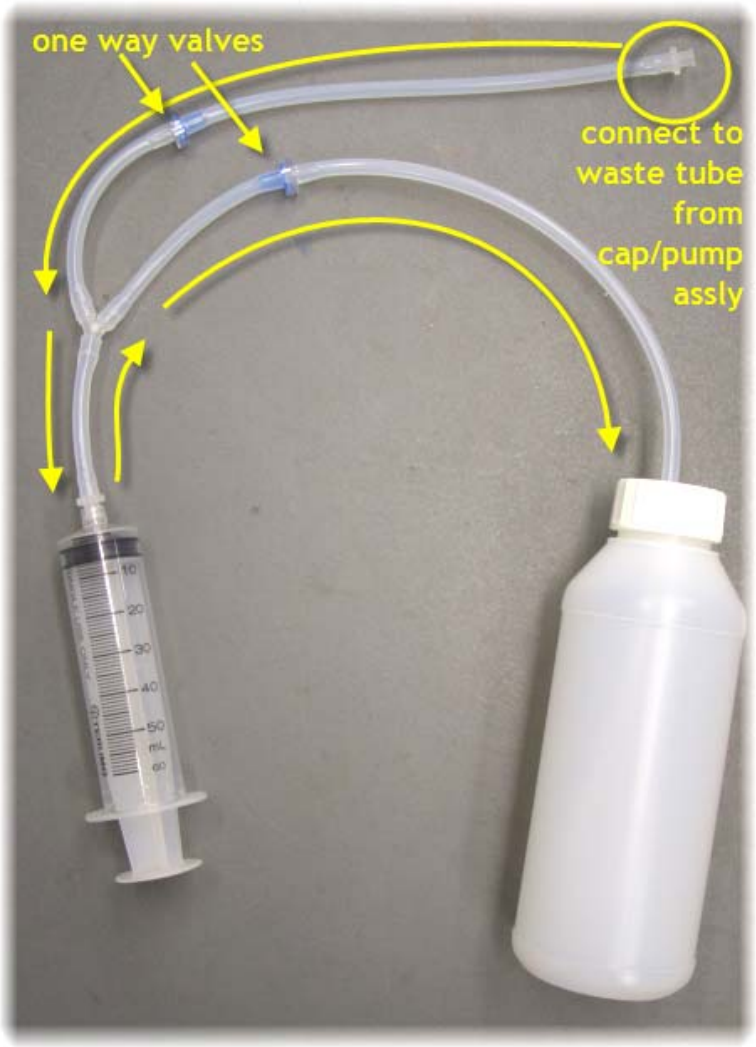
You can do so by using the manual Cleaning Pump Assembly supplied with your DTG Viper™.

The basic concept of this process is that the ink is "pulled" into the dampers & print head by way of suction that is applied via the capping / pump assembly to draw the inks through the dampers & print head (and capping /pump assembly) and (any excess) into a waste collection bottle




The most efficient method for doing this is as follows:

- Clamp closed the White Ink tubes (the White Ink is already in the Manifold, close to the Print Head courtesy of the WIMS pump – it will require less draw to charge the print head and so the tubes can be clamped off for part of this procedure). This will minimize ink wastage.
- Ensure that the clamps on the CMYK ink tubes are in the open position.
- Disconnect the Capping Station Waste Ink Tube from the Waste Ink Bottle & connect it to the manual Cleaning Pump Assembly.



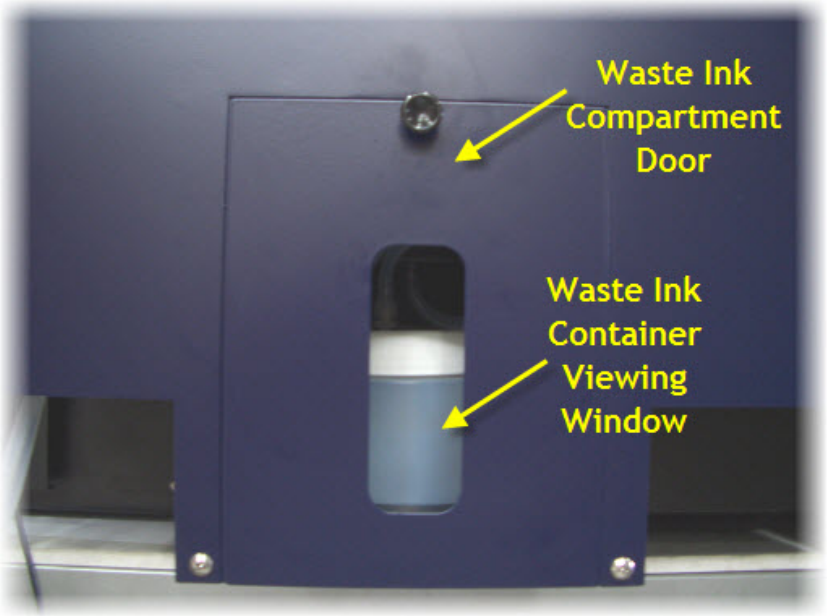

- Draw on the syringe plunger slowly to start drawing ink through the ink system into the syringe. If the syringe fills with air before ink is drawn into it, then depress the plunger, the air will be pushed through to the waste collection bottle, courtesy of the one-way valves in the Cleaning Pump Assembly
- When you observe the CMYK inks all flowing through the ink tubes and into the Print Head Carriage area, open the clamps on the White Ink Tubes to allow the White Ink to be drawn through also.
- Collect approximately 30-40mm of ink in the waste bottle
- Disconnect the Waste Ink Tube from the Cleaning Pump Assembly and re-connect it to the Waste Ink Bottle.
- Clean the Cleaning Pump Assembly
- Execute a Head Clean from the Control Panel (Press & hold the Menu 

button for 3 seconds until CLEANING appears on the Control Panel display.
- It is recommended that you allow the printer to "rest" now for 15 minutes or so prior to running test prints - this will allow any air bubbles in the inks to settle somewhat prior to printing.

From this point on, you will simply need to add ink to the bulk ink bottles as you use the system. Take care to avoid creating bubbles when doing so. Or alternatively, add ink after production has finished for the day, allowing bubbles to settle overnight before again using the printer. *Remember to keep ink bottles between 50% and 75% full at all times.*

## 5.7 Monitor and Empty the Waste Ink Container as Needed

Your DTG Viper™ comes with a Waste Ink Container which captures waste ink generated during charging, head cleaning & normal printing (all as described previously & further in this document). You will need to monitor the level of waste ink on a regular basis to ensure that the Waste Ink Container does not overflow.




*Pay close attention to the waste ink bottle. Always empty the bottle before filling the ink bottles, and monitor the waste ink level regularly during the operation of your DTG Viper™.*

# 6 Basic Printer Operations

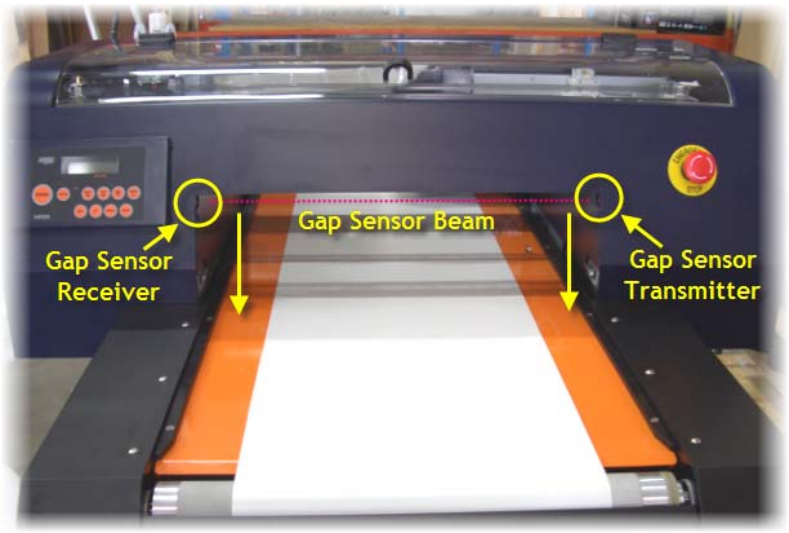
## 6.1 Loading Media

In order to start printing, you will first have to ensure that the media to which you wish to print is properly loaded to the "top of page" or "origin" position in the printer.

Remember that the DTG Viper™ is set to simulate Roll Feed paper via the conveyor, so in general, the printer will be set to print at any time – however *you must ensure that the media is loaded to the correct position to ensure that the output prints to where you expect.*

In addition, you need to ensure that your media is close enough to the print head during printing that you achieve good quality prints. If the media is set too low, the spray of ink from the print head can be diffused and create an unclear print. At the same time, it is important to not set the media too high so that it may cause the Print Head to brush or even strike it during printing. The Gap Sensor should be utilized to set the optimum media height:

- Ensure that the media (paper, garment etc.) is as smooth and flat as possible.
- The media should be positioned on the right hand side of the Printing Bed, such that the media will trigger the Media Sensor (by mechanical contact) when the Load button is pressed. Remember though that the Origin point of the print space is the left corner opposing the Media Sensor. Take this into account when preparing artwork for printing.
- Place the media (on a Platen, if necessary) onto the Printing Bed (on the white conveyor belt). The leading edge of the media / platen should be placed such that it is no more than ¼" (5mm) past (toward the rear of the printer) the line of the Gap Sensor Beam.

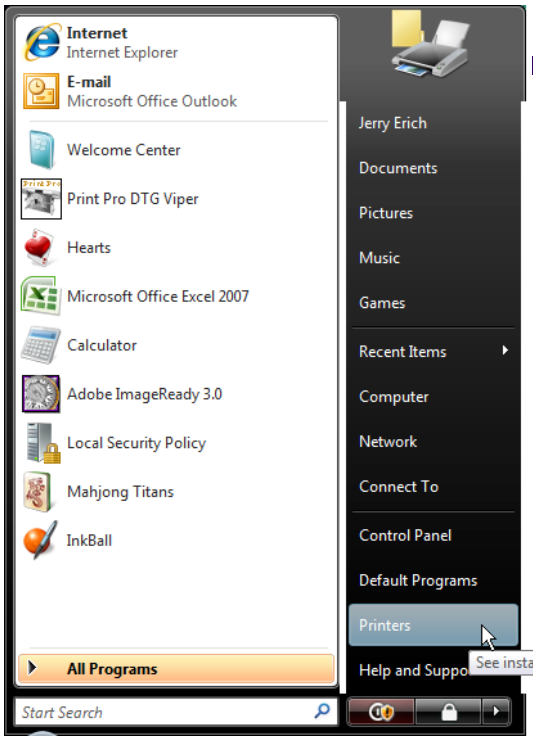



- Ensure that the Gap Sensor is set to "auto" mode (indicated by the Green Gap Light)
- Press and hold the Up button to raise the Printing Bed (and the media placed upon it) to the point where the Gap Sensor is triggered (indicated by the Red Gap Light). Once the Gap Sensor is triggered, the Printing Bed will lower slightly to set the correct "gap" between the media & the Print Head during printing.
- Press the Load button. This will start the forward movement of the conveyor in order to "load" the media to the top of page position (determined by the mechanical action of the Media Sensor). Any high points on the media behind the leading edge of the media may trigger the Gap Sensor, causing the Printing Bed to further lower. Ensure that the media is as flat as possible in order to minimize the gap between the media & the Print Head. If necessary, retrieve the media from the top of page position, smooth & flatten it, and repeat the steps above in order to optimize the printing gap.

## 6.2 Configure Basic Printer Driver Settings

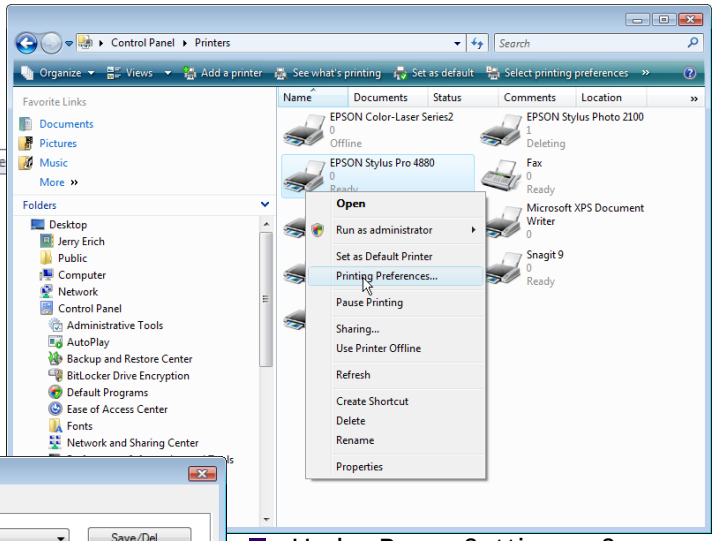
A printer driver is a piece of software that converts the data to be printed to the form specific to a printer. When you installed the Epson Stylus Pro 4880 driver (Section 5.5 above), a User Interface for the driver was also installed to your computer, we also refer to this interface as the Printer Driver.

There are some basic settings which should be configured in this Printer Driver interface which will aid in the functionality of the DTG Viper™ (note that some of the dialog boxes may appear differently depending on the Windows operating system that you are using):

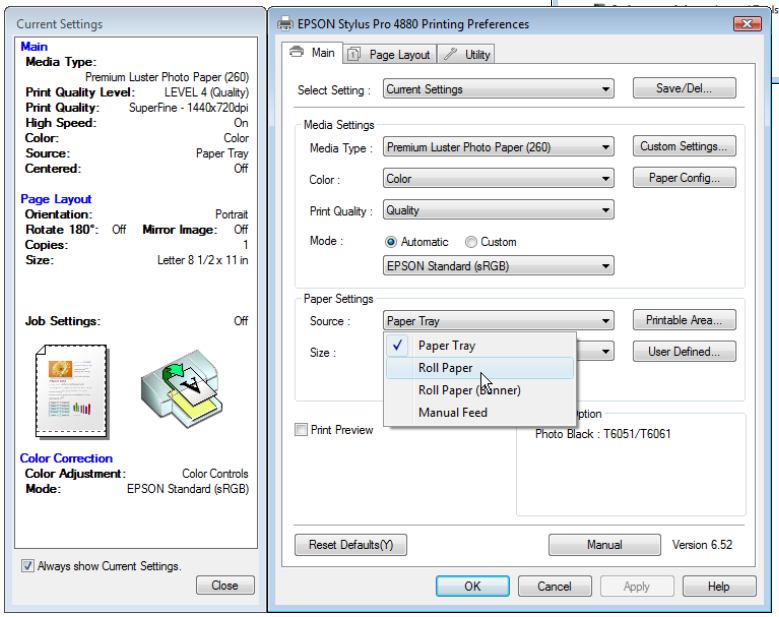


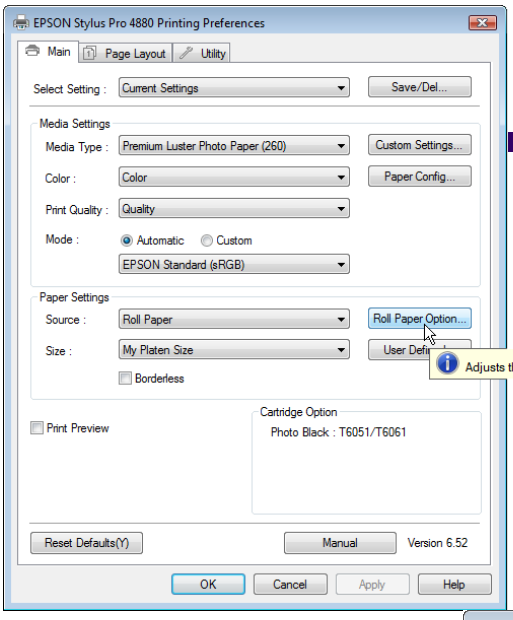

- From the Start Menu in Windows, select Printers. If Printers is not listed in your Start Menu, choose Control Panel, then Printers. (If Printers is not on your Start Menu in Windows, you might consider adding it by changing your Properties for the Windows Start Menu, or adding a shortcut to Printers on your Desktop – refer to your Windows documentation for further information).

- Using your mouse, Right Click over the Epson Stylus Pro 4880 icon, and select Printing Preferences from the displayed menu.

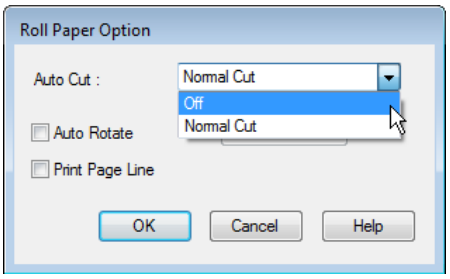



- Under Paper Settings > Source, select Roll Paper.

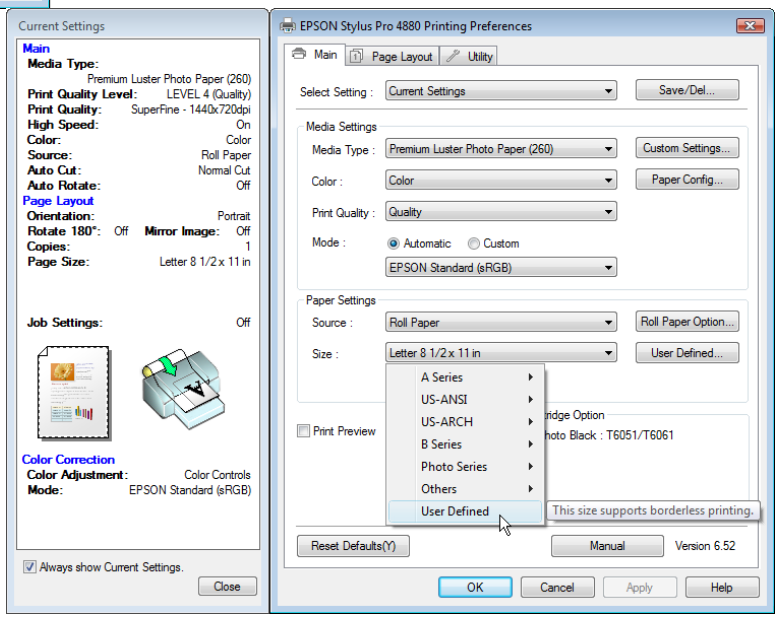




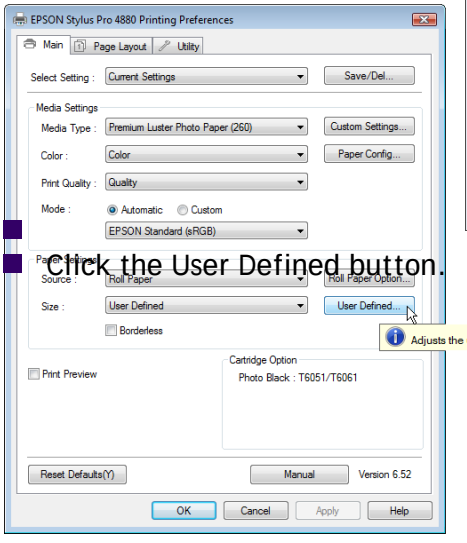

- Click on the Roll Paper Option button, and select Off from the Auto Cut option list. Click OK.



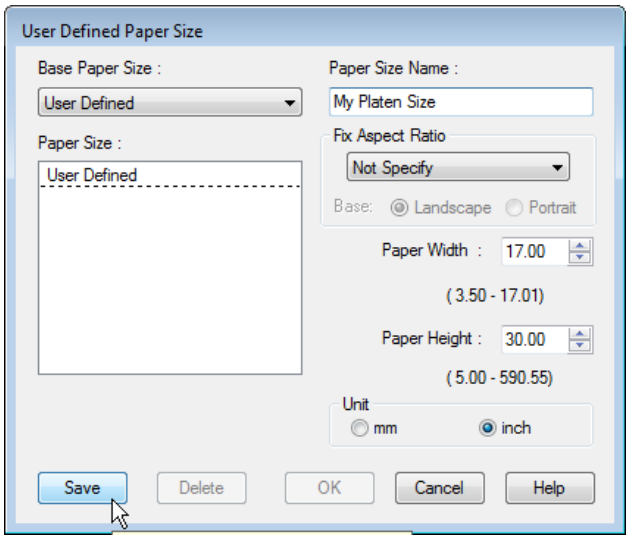

- Under Paper Settings > Size, select User Defined.



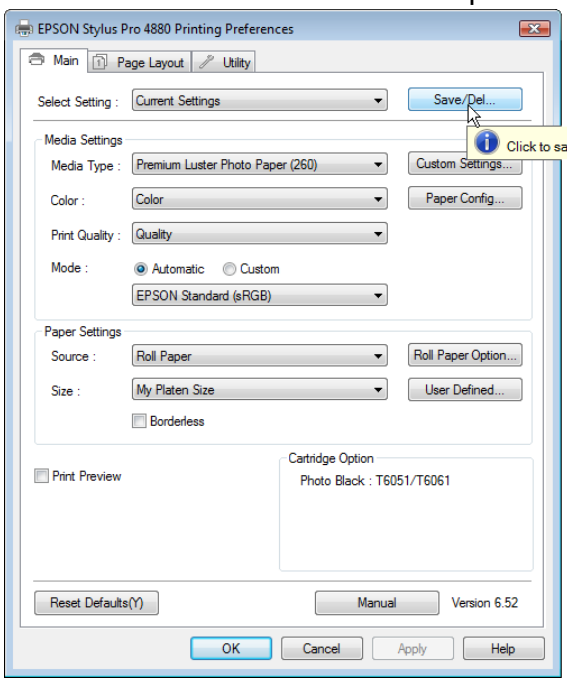

- Click the User Defined button.



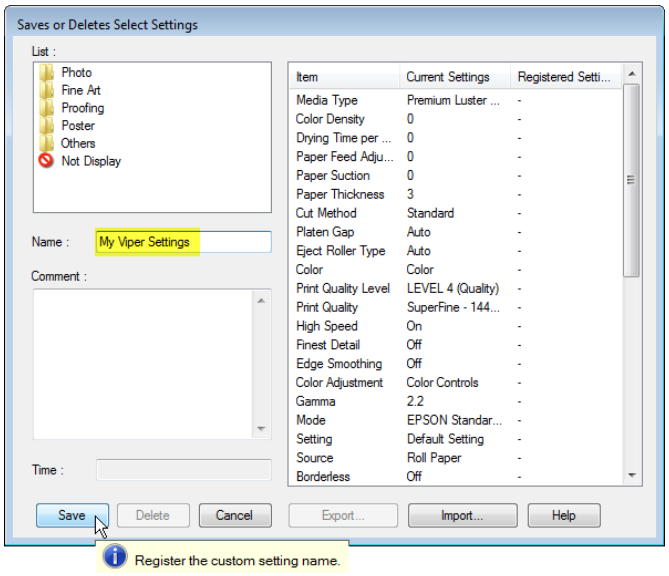

- In the User Defined Paper Size dialog box, Enter a name for the size you are creating, and set the Paper Width to 17 inches, and the Paper Height to the same length as the standard or default Platen that you will using. In this example, we have set this to 30 inches. Click the Save button. The name will be saved in the Paper Size list and will be



available for selection as the Paper Size. Click OK.




- Click the Save/Del button (from Select Setting) to save these changed settings for easy retrieval in the future.




- Give the Settings a Name, then click Save to Register the Custom Setting Name.

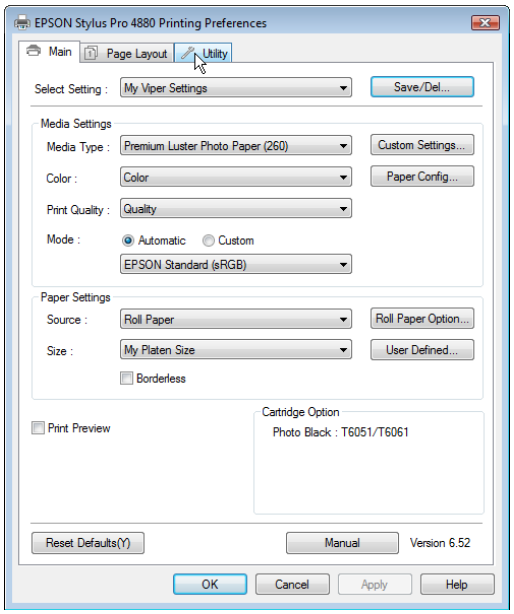
- Click the Apply button on the Main tab of the Printing Preferences window to store all of these settings as the default settings for the printer. Click OK to close the Printer Driver.

## 6.3 Printing a Nozzle Check Pattern

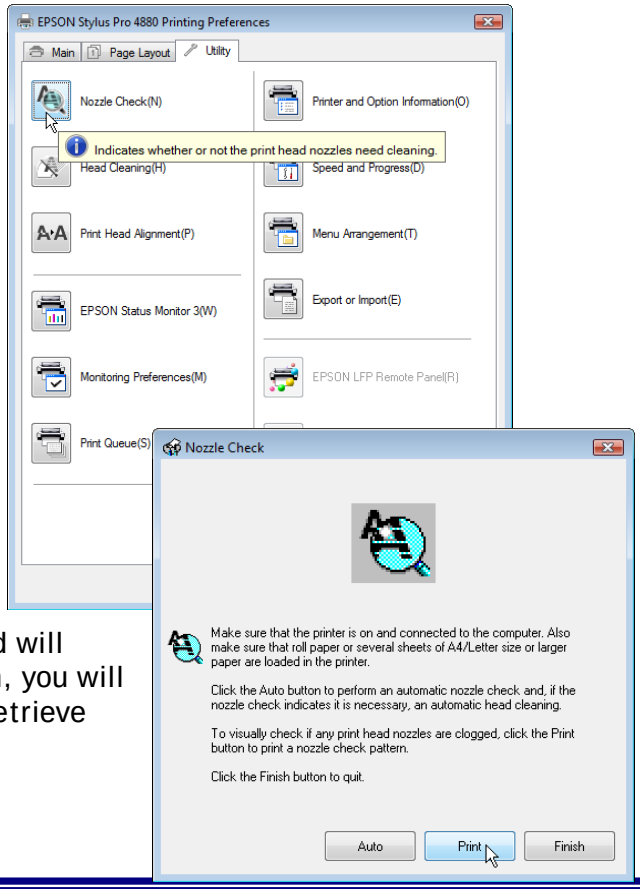
To check that the Print head is fully charged with Ink and ready to print, you will need to print a Nozzle Check Pattern.

You should also print these Nozzle Check Patterns each day before production and often during production if lines or gaps start to appear in your printed output. This will identify very quickly whether there are blocked nozzles in your Print head or the Print head is not fully charged with ink – which in most cases will be cleared very quickly by following through with the Head Clean / Nozzle Check cycle as described below.

Perform a Nozzle Check when the printer is in a Ready state (the Control Panel LCD Display should show READY). Use a clear thin sheet of transparent plastic or a thin sheet of stainless steel to print the nozzle check on – place it on top of and to the front and left edges of your Platen . Place the Platen so that it's leading edge is just inside the Printing Head Unit and ensure that the gap between the top of the Platen and the Print Head is at minimum: use the Up and Down buttons to adjust the height of the Printing Bed (with printing sheet on the Platen) as described above in Section 6.1 above. Press the Load button to move the Platen to the top of page position (also described above in Section 6.1).



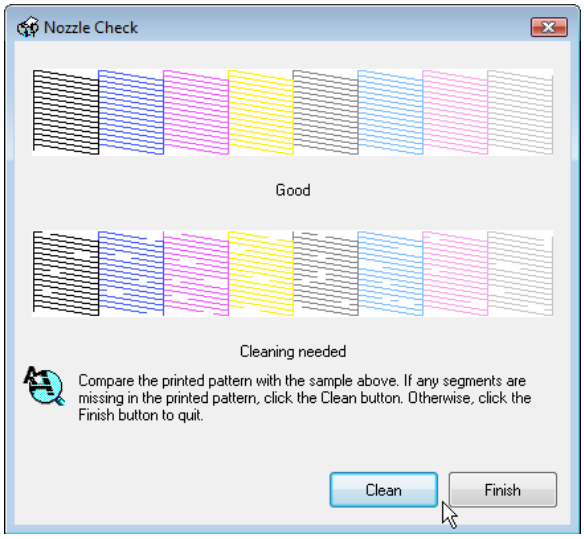

- The Nozzle Check Pattern can be printed from the Utility tab of the Printing Preferences dialog for your Windows Epson Stylus Pro 4880 printer driver.




- Click on the Nozzle Check icon.
- In the Nozzle Check window, click on Print to start printing the Nozzle Check pattern.

*DO NOT click the Auto button, the functionality for this is not supported by the DTG Viper™ by virtue of the use of the White Ink.*

Once the pattern has printed, the Printing Bed will move the Platen to the "Epson" eject position, you will need to manually pull the platen forward to retrieve the printed pattern.

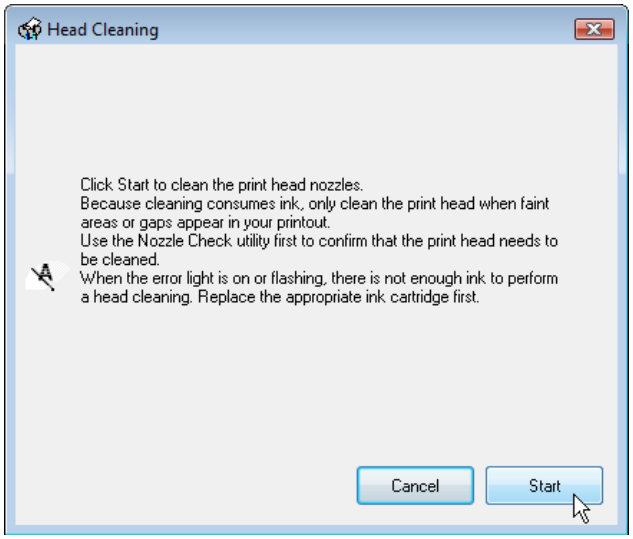



The Nozzle Check pattern that has printed will look something like the pattern displayed on your computer screen and in the screen shot shown here. The major difference will be that instead of the 4 light colours shown on screen and to the left here, your printed output will be white ink for these 4 blocks. This is because the DTG Viper™ uses these 4 Epson Stylus Pro 4880 ink channels for it's white ink supply.

As suggested in the dialog box above, compare your printed pattern with the sample on screen. If any segments are missing in the printed pattern, click the Clean button. If each of the eight blocks within your printed pattern are complete, your DTG Viper™ is fully charged with ink, and has no blocked ink nozzles. In this case, click the Finish button to quit. Often, if your printed pattern has a few small segments missing, it can be more efficient & effective to send a complete print job through the printer to clear these missing nozzles rather than executing endless cycles of head cleans.

## 6.4 Print Head Cleaning

Should your printed Nozzle Check pattern (see previous section) have missing segments, you can execute a Print Head Cleaning in an attempt to clear those missing segments. If you clicked Clean from the Nozzle Check dialog, or if you clicked on Head Cleaning from the Utility tab of the Printing Preferences dialog of the printer driver you will be presented with the following Head Cleaning dialog.




- Click on the Start button to execute the Head Cleaning function on the printer. This will execute a Print Head Clean which involves the printer both pumping a little ink through the Print Head and moving the Print Head across a Wiper Blade which wipes excess ink from the face of the Print Head. Both of these actions can assist in clearing blockages in print head nozzles and / or further charge the Print Head with ink.

Once the printer has finished the Head Cleaning you can execute the print of a Nozzle Check pattern (see section 6.1 Printing a Nozzle Check Pattern above).

You can cycle between the Head Cleaning and Nozzle Check Pattern print until your printed Nozzle Check Pattern is complete. It is not recommended to run this cycle more than 3-4 times. If there are still missing segments in your Nozzle Check Pattern print after 3-4 cleans, turn the printer off and let it sit overnight. Then try Head Cleaning again.

## 6.5 Power Clean

In some instances, the Head Cleaning mentioned above in Section 6.4 is not strong enough to clear stubbornly blocked nozzles. In these cases, it may be necessary to run a Power Cleaning on the printer via the Control Panel menu.

It must be noted that this process consumes a considerable amount of ink and should only be used in extreme situations:

- Ensure that the Waste Ink Canister / Bottle is empty
- The printer must be in a READY state.
- Press Menu 

from the Control Panel – PRINTER SETUP will be displayed.
- Press 

or 

until MAINTENANCE is displayed, press 

- Press 

or 

until PWR CLEANING is displayed, press 

- The Control Panel display will ask you to confirm the Power Cleaning and acknowledge that you will be required to move the Ink Levers during the Cleaning process.
- Press 

to start the Power Cleaning process.
- Do not leave the printer unattended during this process, there will be messages on the Control Panel display asking you to raise and lower the Ink Levers at various times throughout the Power Cleaning, which you must do.

*After you have raised or lowered the Ink Levers the display may ask you to Raise or Lower a particular lever even though you have already done so. These messages should clear after a minute or so and the printer will continue the Power Cleaning function. DO NOT try to raise/lower the Ink Lever in question again as this will cause the Power Cleaning function to restart from the beginning.*

## 6.6 Clean using Cleaning Pump Assembly

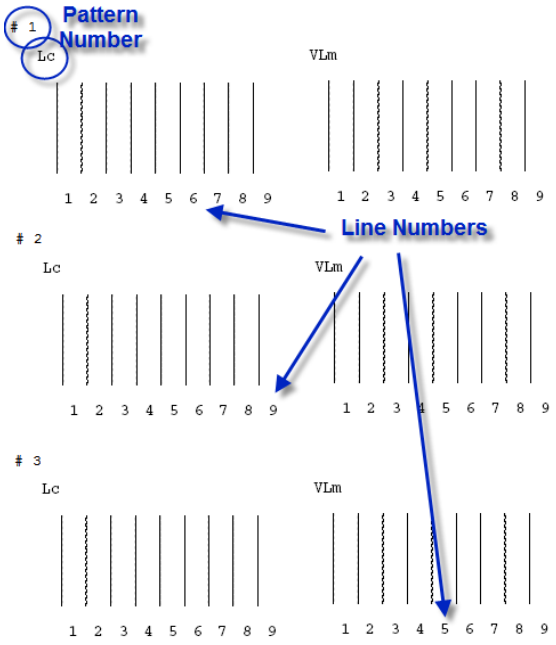
As an alternative to using the Power Clean method described above in Section 6.5 , you can re-connect the manual Cleaning Pump Assembly as described in Section 5.6 “Drawing Ink from the Ink Bottles to the Print Head” above and use the syringe to draw 20-30ml of ink through the capping station from the Print Head. The suction used in this method is quite strong & often sufficient to clear stubborn nozzles. Ensure that this procedure is followed with a Head Clean – either from the Control Panel or from the Printer Driver.

## 6.7 Bi-D Head Alignment

If you see misaligned lines or black or white vertical banding in your printed image, you may be able to solve the problem by performing a Bi-D Alignment via the Control Panel of the DTG Viper™.

*DO NOT attempt a Print Head Alignment from the Utility Tab of the Preferences dialog of the Printer Driver. This process utilizes an automatic alignment, and the functionality for this is not supported by the DTG Viper™ by virtue of the use of White Ink in the printer. Attempting a Print Head Alignment by this method will result in a complete reset (not correction) of the alignment of the Print Head and will require correction via the Bi-D Alignment described below.*

- The printer must be in a READY state.
- Use a clear thin sheet of transparent plastic or a thin sheet of stainless steel to print the Alignment patterns on – it should be a minimum of 450mm x 600mm.
- Place the printing sheet on top of and to the front and left edges of your Platen . Place the Platen so that it's leading edge is just inside the Printing Head Unit and ensure that the gap between the top of the Platen and the Print Head is at minimum: use the Up and Down buttons to adjust the height of the Printing Bed (with printing sheet on the Platen) as described above in Section 6.1 above. Press the Load button to move the Platen to the top of page position (also described above in Section 6.1).
- Press Menu  from the Control Panel – PRINTER SETUP will be displayed.
- Press  or  until HEAD ALIGNMENT is displayed, press 
- Press  or  until ALIGNMENT is displayed, press 
- Press  or  until MANUAL is displayed, press 
- Press  or  until BI-D 2-COLOR is displayed, press  to print the Head Alignment pattern.




- The printed pattern will be made up of 3 rows each containing 4 sets of printed lines. The 4 sets are in the order Lc, VLm, Lc, VLm
- After printing is finished, the pattern number and the current line number are displayed on the printer's LCD. The first display will be:

BI-D 2-COLOUR
< #1 LC *5

In this case it is asking for entry of the desired line number for Lc in Set #1

- Examine the lines in the printed pattern and select the line with the smallest gaps in each of the 2 sets for Lc in Row 1, then take the average of the two numbers for Lc. For example, if the best (straightest) line in the first set of Lc in Row 1 is 8, and the best line in the second set of Lc in Row 1 is 10, then the average would be (10+8)/2 = 9.
- Press 

or 

to display the selected number for that line.
- Press 

to store the selected number. The next pattern number appears. Repeat the above step for each pattern on the printout.
- Press 

as necessary to return the printer to a READY state.
- If you are satisfied that the lines you have selected are the best possible in all cases, then you can store the results you have just entered by turning the printer off at the Control Panel. Wait 1 minute before turning the printer back in.
- In most cases, you will need to repeat the above procedure several times in order to achieve optimum alignment.

## 6.8 Resetting Cartridges

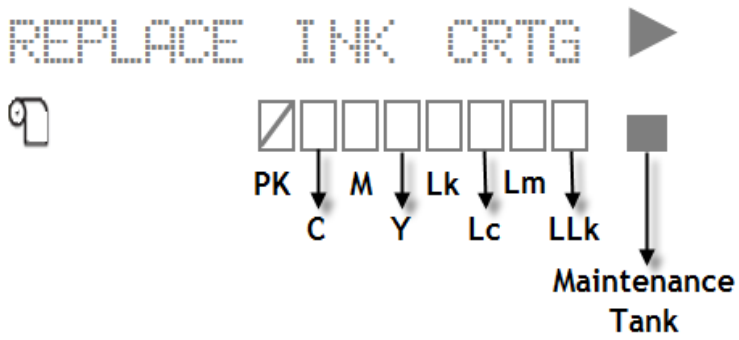
As discussed previously, your DTG Viper™ is based upon the Epson Stylus Pro 4880 printer. This standard printer uses 110 or 220 ml ink cartridges instead of the dampers and bulk ink system used in the DTG Viper™. The standard printer uses micro-chips on the ink cartridges to "count" ink drops that pass through the print head to determine when a particular cartridge is getting low on ink. The printer will then flash the corresponding cartridge indicator on the Control Panel as a visual warning to the user.

This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. Neither the Epson 4880 printer nor the DTG Viper™ can tell how much ink is actually in the bulk ink bottles of the DTG Viper™. "Dummy" cartridges are provided with your DTG Viper™ purely to satisfy the firmware requirement that cartridges are installed.

Ink consumed during printing, head cleans and ink charges all contribute to the ink drop count, once the count reaches the limit for the installed cartridge(s) the Control Panel lights and LCD display will signal warnings & the cartridges will require resetting.

Occasionally, the cartridges may error, and the LCD display will show various messages such as SET INK CARTRIDGE or WRONG INK CARTRIDGE. The cartridges will also require resetting when this occurs.

To identify which cartridge requires resetting, refer to the Control Panel display. Generally, the "offending" cartridge will be indicated by a flashing box or a box with a line through it (depending on the error) on the Control Panel LCD Display. The boxes on the LCD display represent each of the 8 cartridges housed in the Cartridge Bays at the rear of the printer, in the same order as you view them when standing at the rear of the printer. For example, if the following is displayed on the Control Panel LCD Display, you would remove & reset the very left hand cartridge (Photo Black) of the LHS Cartridge Bay (when you are facing the rear of the printer)



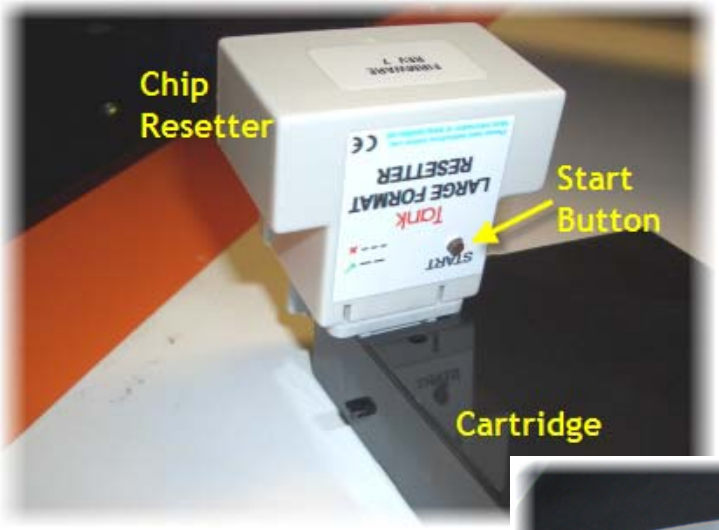

The method of resetting the cartridge will depend on the Error Message displayed in the Control Panel LCD display. Please refer to the table below for the required Reset method in each case.

### Using the Chip Resetter

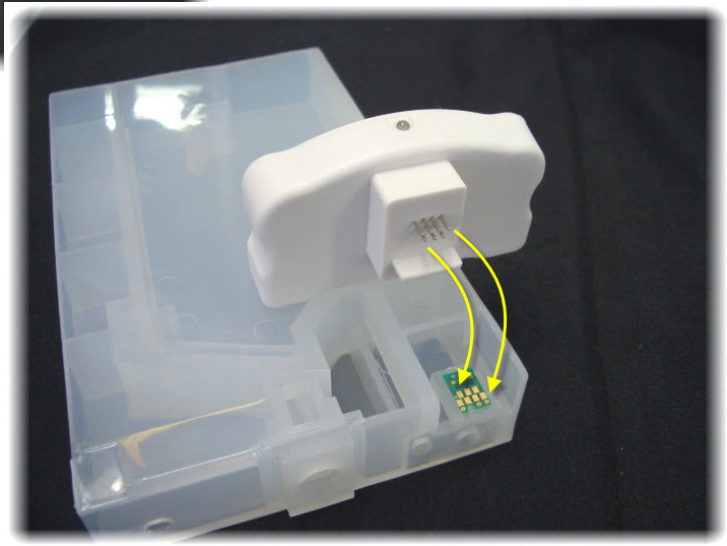
Most cases will require the use of the Chip Resetter which is supplied with your DTG Viper™.

- Remove the cartridge(s) to be reset from the Cartridge Bay(s) by firs raising the Ink Lever for that bay, then sliding the cartridge out of the bay.

- Apply the chip resetter to the Ink Chip as shown




- Press the Start Button on the Chip Resetter.
- The small LED at the back of the Chip Resetter should flash Red slowly 6 times to indicate that the reset has been successful.
- If the LED flashes quickly / erratically, the reset has failed. Reposition the Chip Resetter on the cartridge & attempt the reset again.
-



- For users whose Viper is supplied with the white translucent cartridges, your chip resetter will be a slightly different shape, and will not have a Start button. The principle for resetting is very similar, simply place the pins of the resetter against the chip on the cartridge, the small LED at the top of the resetter should start to flash red. When the chip has been successfully reset, the LED will be solid green.
- Once the cartridge ink chip has successfully been reset, slide the cartridge back into the Cartridge Bay.
- Once all cartridges that require resetting have been reset and returned to the appropriate Cartridge Bay, lower the Ink Lever(s).

| **Message / Indicator** | **Reset Procedure** |
|---|---|
| INK LOW / Ink Light Slow Blink | Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. |
| REPLACE INK CRTG / Ink Light Solid | Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD. |
| INK OUT / Ink Light Solid | Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD. |
| INVALID INK CRTG / Ink Light Solid | Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD. |
| WRONG INK CRTG / Ink Light Solid | Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD. |
| NO INK CRTG / Ink Light Solid | Reset the Cartridge(s) as indicated by the |

| | |
|---|---|
| | cartridge indicator on the Control Panel LCD. |

*You may receive a Control Panel display message to the effect of "insufficient ink to complete this operation" when you execute a Power Clean. This means that the ink chip count on one or more cartridges is high, and as there are no indicators as to which cartridge(s) this message applies, all 8 Cartridges will need to be reset.*

Resetting the cartridges "refreshes" them to a state where the printer will think they are new, but non-genuine Epson cartridges. The Control Panel LCD will display messages asking you to acknowledge the use of non-genuine Epson cartridges.:

- Panel will display NON-GENUINE
- Press the FWD button  to scroll through the message lines, until
- ◄YES NO ► is displayed, then press the Select button 
- The panel will display THIS MAY VOID
- Press the FWD button  to scroll through the message lines, until
- ◄ACPT. DECLINE ► is displayed, then press the Select button 
- The panel will display PLEASE WAIT and then PAUSE and then READY.

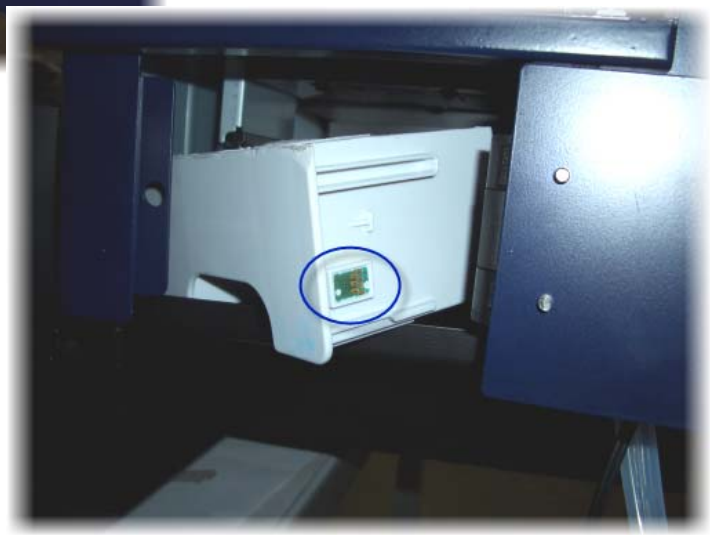
The printer is now in a READY state.

## 6.9 Resetting the Maintenance Tank

During the Head Cleaning process your DTG Viper™ forces ink through the print head. This excess ink goes into a holding bottle called the **Waste Ink Canister /Bottle**, accessible through the door on the right front side of the Panel. In the standard Epson Stylus Pro 4880, this excess ink is passed into a holding tank called the Maintenance Tank. This tank has an ink counting chip, similar to that found on the ink cartridges. In this case, however, the Maintenance Tank chip will create an error when it is full, or near full.

This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. The front end of the Epson Maintenance Tank, complete with the ink count chip, is located at the rear of the DTG Viper™, beneath the RHS Cartridge Bay.


As with the ink count chip on the Cartridges, the Chip Resetter can be used to reset the Maintenance Tank ink count chip.



If the following messages / indicators appear on the Control Panel, open the Maintenance Tank Compartment, slide out the Maintenance Tank and apply the Chip Resetter to the ink count chip on the side of the Maintenance Tank as described in Section 0 above. Once the chip has been reset successfully, slide the Maintenance Tank back into the compartment, and close the door:

MNT TK NEAR FULL

MNT TK FULL

The display panel may occasionally display NO MNT TK. This error may be caused by a slight shifting of the maintenance tank due to vibrations during printing. If this error is displayed, simply slide out the Maintenance Tank slightly and push it back in to re-seat the Maintenance Tank.

# 7 Printing on Textiles with the DTG Viper™

Printing on textile items with the DTG Viper™ is a very simple process involving four easy steps:

1. Create an image in any of your graphics programs
2. Prepare a T-shirt or other textile item for printing
3. Load a T-shirt or other textile item onto the printer
4. Set-up your image for printing with the RIP program
5. Press the Print button.

Once you are comfortable with the basic operations of your DTG Viper™, you are ready to proceed!

## 7.1 Garment Preparation

Lint is one of the biggest enemies of the DTG Viper™. By shaking your garment (away from the printer) prior to use, you can remove some of the excess lint from the garment. Pressing the garment can also help to contain excess lint. White or light coloured garments which do not need white ink require no further preparation.

Dark fabric, and some colours require a pre treatment process. The pre treat / underbase forms a special receptive surface for the white ink to adhere to. POOR PRE TREAT = POOR PRINT QUALITY. Application of the pretreatment solution is key to obtaining white opacity and ink adhesion to the fabric.

*Safety*

- Please refer to the supplied MSDS sheet prior to use of this product.
- This product can be used safely when used as directed and when applicable safety precautions are followed.

*Equipment needed for proper pretreatment solution application:*

- Respirator (disposable face mask which removes 95+% of airborne particulates (3M™ Model # 8210 or similar)
- Foam Roller (the type used for painting) – optional
- Wide Bristle paint brush - optional
- Liquid Mistifier (airbrush, air pump sprayer, fine mist power sprayer, such as Wagner® Power Sprayer Model HVLP)
- T-shirt Press
- Parchment Paper (also named Quillon paper)

*Recommended procedure:*

The following procedure will help ensure consistent quality and performance of the White Ink:

- Agitate or shake the pretreatment solution prior to filling your sprayer. Locate the sprayer area in a different room than your printer(s). Overspray can find its way into the printer and potentially damage the device.
- Locate the sprayer area in a well ventilated area. Set the heat press for 170ºC (~340ºF)
- In humid environments, it is often beneficial to pre-press the shirt (using the parchment paper as a barrier from the press) for 10 to 15 seconds prior to applying the pretreatment. This removes some of the water naturally trapped in the fibers.

- Using the spraying system, spray the underbase / pre-treatment evenly on the area that is to be printed. The recommended coverage is about 20g to 25g (0.7 oz to 0.9 oz) for a 14" x 17" printing area.
- Set your sprayer for medium coverage. This is normally the setting between no liquid being sprayed and the maximum available.
- Prime the sprayer for a few seconds by spraying into a large cup, but not on to the shirt area. This helps prevent larger drops that occur when the sprayer is starting up.
- Keep the sprayer about 12 inches (0.3 meters) from the shirt and begin spraying from the top to the bottom in a left to right (and then reverse, right to left) motion without ever turning off the sprayer
- It is good practice to allow the sprayer to go beyond the edges of the shirt before beginning or reversing direction. This prevents more pretreatment from being deposited on the shirt during the direction change.
- If all settings correct, you should dispense the proper amount of pretreatment solution in about 15 seconds.
- If you are printing only a small image on the garment, you can make a mask or stencil to place over the garment before spraying, so that only the required print area of the garment receives the pre-treatment. This will save on pre-treatment.
- Following the application of the pretreatment solution, and prior to heat pressing, close examination of the garment's surface should show the appearance of fine droplets not unlike dew on grass. A representation is shown below:

- After spraying the garment, you can wipe with the foam roller, uniformly and in one direction, to get even coverage.

- For best image quality, drying the pretreated garment in a t-shirt press (using the parchment paper as a barrier from the press) is preferred. A minimum of 15 seconds, up to a maximum of 60 seconds at the 170ºC (~340ºF) setting. This causes the pre-treat to bond the flattened fabric fibers down and produces an optimised surface for ink jet printing. When the white ink comes into contact with the pre treat it causes a chemical reaction resulting in a rapid fixing of the ink. Ensure sufficient pressure on the heat press to properly flatten the fibres of the fabric and provide a smooth even surface for printing.

*Examples:*

- Correct Application of Underbase:

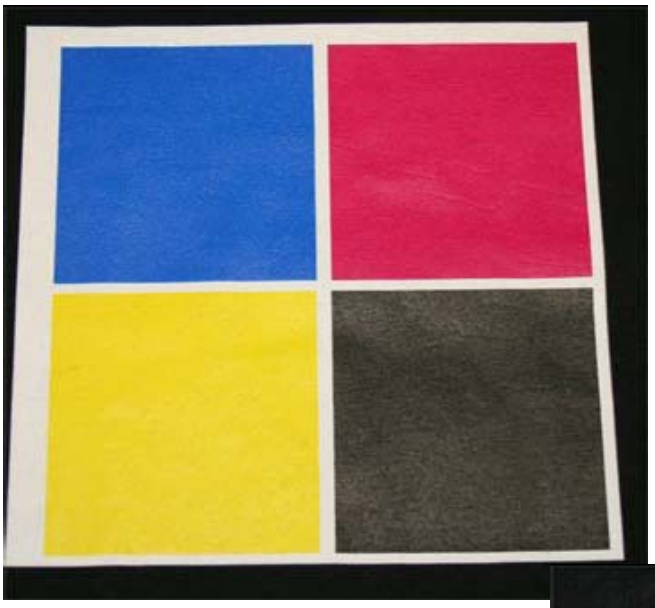
A garment that has been properly pretreated, printed, and heat-pressed will demonstrate strong white layer and color retention, even after several washes.

- Insufficient Pretreatment:

If too little pretreatment solution is applied, the white ink will have a mottled appearance after printing. This is due to an insufficient amount of pretreatment to keep the white ink layer on the surface (the ink soaks into the fibers of the shirt).

An example of insufficient pretreatment:

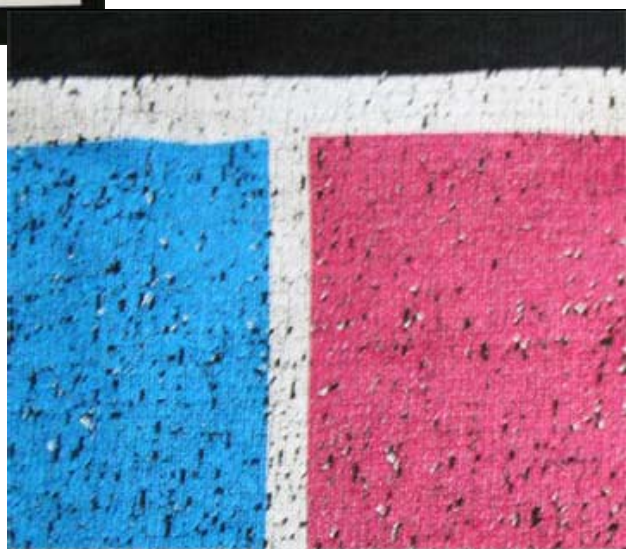
- Excessive Pretreatment:



Applying too much pretreatment solution will provide you with a very good looking print prior to washing. However, excessive application of pretreatment will cause poor wash fastness and durability. The white layer becomes much more susceptible to flaking off of the shirt in a wash if too much pretreatment is applied.

Here, the shirt with an excessive amount of pretreatment looks very good after printing and pressing.

The same shirt, with excessive pretreatment solution applied, is shown here after washing. This shirt exhibits the cracking and loss of color associated with too much pretreatment being applied.



*The conditions listed above are general guidelines for the application of the Underbase (pre-treatment) for White Ink. Due to potential differences in the fabric or garment as well as potential differences in fusing equipment, these general guidelines may not be sufficient or applicable in all cases. Each customer should carry out on-site tests to identify the optimal fusing conditions for their preferred fabrics and equipment set-up.*

Light coloured garments where you are not planning to print any white ink generally do not require any pre-treatment process.

## 7.2 Load Garment to Platen / Platen to Printer

*Put the garment onto the Platen*

Your authorized DTG Distributor will have supplied at least one platen on which to place garments / other media for printing. Please follow the directions provided by the supplier of your DTG Viper™ for the proper securing of the garment to the platen.

Flatten / smooth out the printing surface. Ensure that any excess garment is tucked out of the way.

*Adjust Printing Bed Height / Move Platen to the Top of Page position*

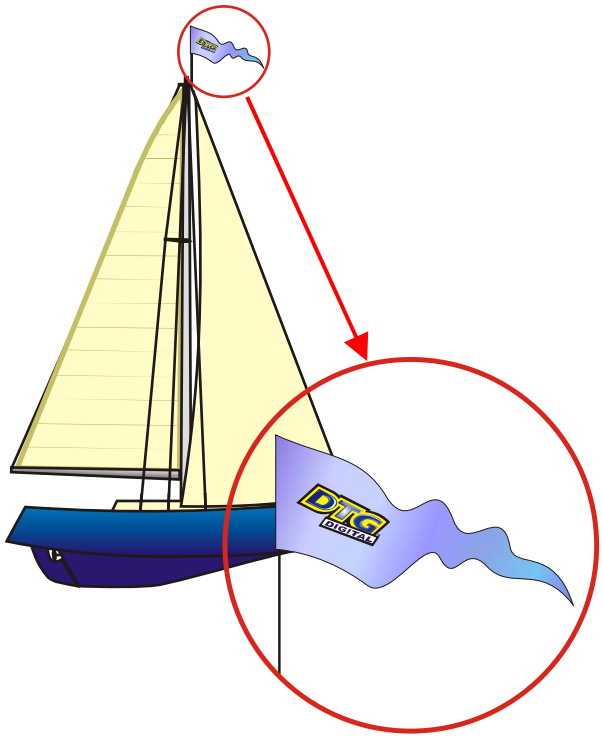
Refer to Section 6.1 for detailed information.

*The Printing Head must not hit the garment or the Platen or any other foreign object during printing. If it lightly brushes the garment you will have to do a head cleaning before the next print. If it even lightly brushes against pre-treated fabric, the pre treat may seal the ink in the head, and you will need to immediately perform several head cleans – and potentially have to replace the Print Head with a new one. If it touches the Platen you will have to do a head alignment. If the Print Head hits the Platen or even the garment itself with some force, you may have to replace the Print Head with a new one.*

## 7.3 Prepare Your Image

Your printed garment will only ever be as good as the artwork from which it is printed, regardless of the RIP that is used to send the printing information to the printer. It is essential that you have a basic understanding of image or graphic types in order to understand your artwork:

## Vectors

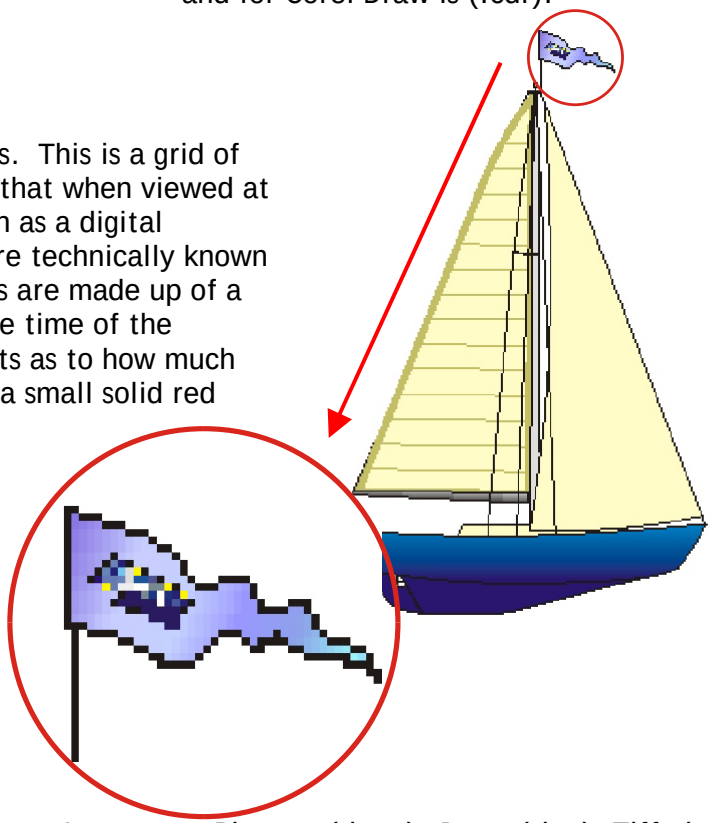


Vector graphics are made up of mathematical outlines and curves that make the shapes in the image. They are commonly referred to as Vectors. Adobe Illustrator and Corel Draw are two programs that create Vector images. These programs have tools that allow the artist to create outlines of any shape they wish. Once an outline is connected or closed the shape can be filled with any color or texture generated by the software. Since these shapes are created by computer generated outlines the resolution is infinite. That is, you can enlarge the image as much as you want and because the image is made up of mathematical shapes & curves, these shapes and curves will enlarge infinitely without losing resolution, as will any "fill" to those shapes or curves.

The file format for Adobe Illustrator is (.ai) and for Corel Draw is (.cdr).

## Bitmaps

Bitmaps are images made up of pixels. This is a grid of small squares of appropriate colours that when viewed at a distance make a graphic image such as a digital photograph or digital art. Bitmaps are technically known as Raster Images. Since these images are made up of a finite number of bits generated at the time of the creation of the image, there are limits as to how much you can enlarge the image. Imagine a small solid red square, say 1 inch x 1 inch.

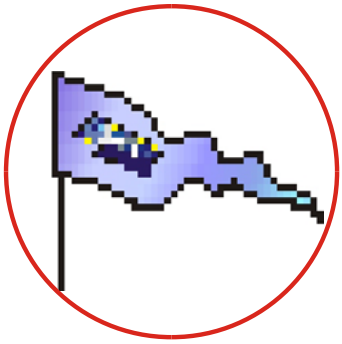


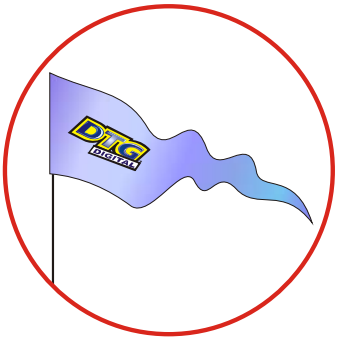
This square was digitally created at 300dpi, meaning (in the simplest terms) there are actually 300 red dots making up the red square. If you now want to enlarge that red square to 2 inches x 2 inches, it is possible, however you still only have 300 red dots to fill that square.

The most common file formats for Raster Images are Bitmaps (.bmp), Jpegs (.jpg), Tiffs (.tif), and Gifs (.gif).

## Resolution

Because a Raster or bitmap is made up of little square dots of colour, the images can often have a jagged look. The greater the number of pixel dots per inch the less jagged the image will look. It will also increase the data size of the file considerably. Dots per inch or DPI is the measurement of the pixel density. One example of low DPI images are web graphics. Web graphics are low to minimize the amount of data bites it takes to load a web page. Web graphics are usually 72dpi or 96dpi. In printing on fabric, it is best to use a DPI of at least 200dpi, preferably 300dpi or greater – at the printing size.






Programs such as Photoshop can be used to "upsample" a small, low resolution image to an image of suitable size & resolution, however you must be aware that these programs will make assumptions & calculations as to where to place the extra pixels & what colour to make them. Images that have been upsampled in this way will often have softer edges, but will be less pixilated. Unless you are proficient in graphics programs, it is always best to ask your client for a higher resolution file in the first place.

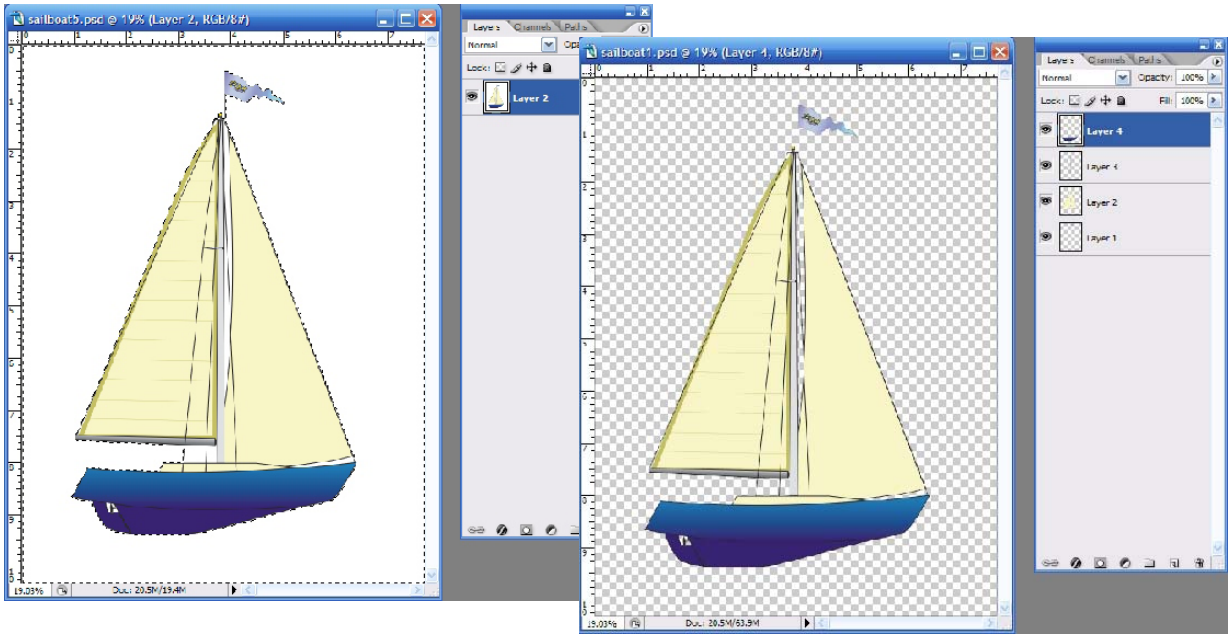
## Image Sharpness & Saturation

Images printed to fabric often tend to be softer & darker than what the image appears on screen. You may need to adjust images to give them a colour boost using a saturation adjustment in the graphics program, and/or sharpen the image using suitable sharpening tools within the graphics program.

## Transparent Backgrounds

As we have already discussed, regular bitmap images are made up of coloured pixels; this includes the background (even a plain white background!). In a digital photograph, the rectangle is filled entirely with colour. Graphic images are not usually just a rectangle. They are shapes and text. The background area is usually filled with white pixels. To print on a media other than white, it is almost impossible to match the digital colour with the colour of the media.

In programs such as Photoshop, the file data includes transparent pixels as a background colour of choice. If the file is set to have a transparent background, then a removed or erased pixel will be virtually removed. Transparent backgrounds are often represented by a grey and white checker board pattern.



*White pixels in background*

*Transparent pixels in background*

The Epson driver was designed to print on a white surface using colour ink. Inherently, it ignores white pixels in an image when printing, and only prints the colour pixels.

The RIP supplied by your authorized DTG Distributor, however, is designed to print all non-transparent pixels, and particularly, to print white pixels with white ink.

It will separate the image into a white ink "underbase" layer (made up of all pixels in the image) and a colour layer with very little additional effort on your part.

## 7.4 Print Your Image.

Refer to the manual for your RIP for detailed information on sending print information to the DTG Viper™.

*Checking PRINT QUALITY*

Print quality is an extremely important component of the printing process. You can check the print quality by doing a Nozzle Check from the Utility tab of the Printing Preferences dialog of the printer driver (more information in section 6.4 (Print Head Cleaning) of this manual). Be aware that you will need to do a Head Cleaning:

- if any streaking appears in the print
- if small drops of ink get on the garment during a printing cycle
- if the unit has been sitting for a few days
- if the printing head brushes the garment

*To have DTG Viper™ go through a head cleaning process without going through the printer driver, press and hold the Menu button* 

*at the Control Panel for four seconds. Severe head clogging may require you to do several head cleanings one after the other. This can be done during printing, the printer will resume printing once it has finished cleaning.*

## 7.5 Post-Printing

After DTG Viper™ has finished printing, the Printing Bed will automatically eject the platen to the front of the printer (or to the rear of the printer if your RIP allows this feature).

*Remove the GARMENT*

Carefully remove the garment from the Platen, so as not to smudge the wet ink.

*HEAT CURE Your Finished Print*

The final step is to heat cure your finished prints to completely set the ink. All prints (on knitted cotton) should be cured (fixed) at **335° F (170° C) for 120 seconds at 10psi**. *Equipment temperature settings should be calibrated using a thermocouple or infra-red thermometer.*

*The conditions listed above are general guidelines for fusing of the DTGTex range of inks . Due to potential differences in the fabric or garment as well as potential differences in fusing equipment, these general guidelines may not be sufficient or applicable in all cases. Each customer should carry out on-site tests to identify the optimal fusing conditions for their preferred fabrics and equipment set-up.*

*WASHING Garments*

Garments printed with the DTG Viper™ can be laundered as normal, with a few restrictions. It is a good idea to give your customer the following washing instructions:

**Turn the garment inside out before washing and drying,
use cold water only and a medium dryer temperature.**

## 7.6 Canceling a Print Job

On rare occasions you may find you cannot get your printer to print. Check the following to rectify the problem:

- Is the printer in the READY state when you send the print command?
- Is there a message on the Control Panel LCD Display or an indicator light on the Control Panel
- Is there a problem with the file you are printing from?

It may be best to cancel the print job and start again. As with any inkjet printer, it is sometimes difficult to stop a print job with the DTG Viper™ once you have set it in motion.

- Firstly, press the PAUSE button 

on the Control Panel to halt the printing.
- Cancel / clear the print job from the RIP and / or the Windows Print Queue.
- Press and hold the PAUSE button 

on the Control Panel to reset the printer. RESET should be displayed on the Control Panel LCD display, followed by READY once the reset is complete.
- In rare instances, you may need to disconnect the power to the printer to fully clear the print job.

# 8 General Care & Maintenance of your DTG Viper

Whilst your DTG Viper™ is built with many standard components from the Epson Stylus Pro 4880 printer, uses the standard Epson Stylus Pro 4880 Windows printer driver, and shares the ease of use of a standard desktop printer, that's where the similarities end. Your Viper will be operating under what could be considered extreme conditions for a desktop printer – exposure to pretreatment sprays and lint from garments, and pushing out increased volumes of ink (when compared to standard "paper" printing). As such, it is important that you take a few minutes each day to properly maintain your DTG Viper™ – this will ensure that it runs in optimal condition.

*Do not leave the Print Head unlocked from it's home position on the Capping Station for any longer than 5 minutes. This will help prevent ink drying in the exposed Print Head. Execute a Head Clean after any maintenance procedure that involves moving the Print Head from the Capping Station.*

## 8.1 Execute a Print Head Clean at the end of production

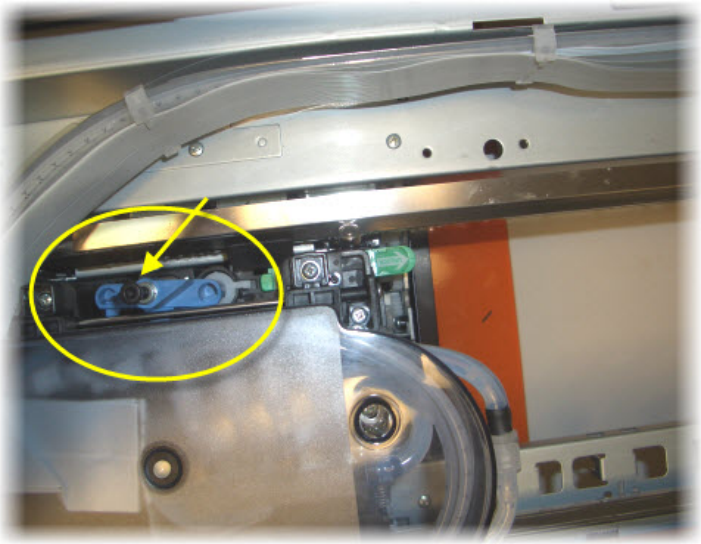
Execute a Print Head Clean at the end of your daily production. This can be done by either pressing & holding the Menu button for 4 seconds or by accessing the Print Head Cleaning from the Utilities tab under Printing Preferences from your printer driver.

## 8.2 Run the Epson Nozzle Check utility each day before starting production

You'll discover any missing nozzles BEFORE they show up on your printed garment! Refer Section 6.1 Printing a Nozzle Check Pattern for further information.

## 8.3 Manually wipe the Edges of the Print Head Face

Use some clean soft lint free cloth or fine foam moistened with cleaning solution to gently wipe the areas around the Print Head Face to remove any lint / ink build up not cleared by the printer's own head cleaning process. Keeping your Print Head clear of ink & lint build up will assist in preventing ink dripping on your garment during printing.



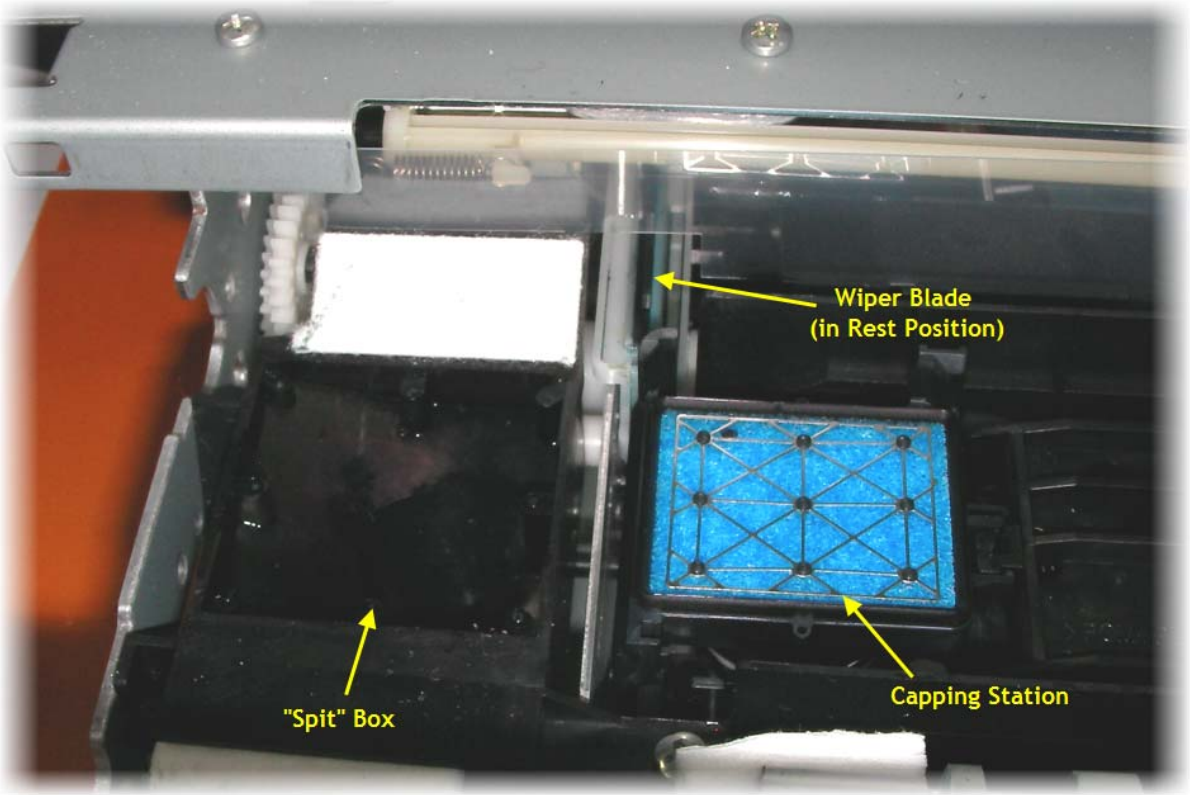
- Turn the Printing Head Unit off. Remove any platens from the Printing Bed. Release the Print Head Carriage from it's home position on the left hand side of the Head Unit by pressing down on the black knob and gently sliding the Print Head Carriage to the right. This will give you easier access to the face of the Print Head.
- Be sure to slide the Print Head back to it's home position on the Capping Station and turn the printer back on when you are done.
- Do NOT re-use the foam pads / cloth – you don't want to be wiping old ink back over the Print Head surface.

## 8.4 Clean the Wiper Blade

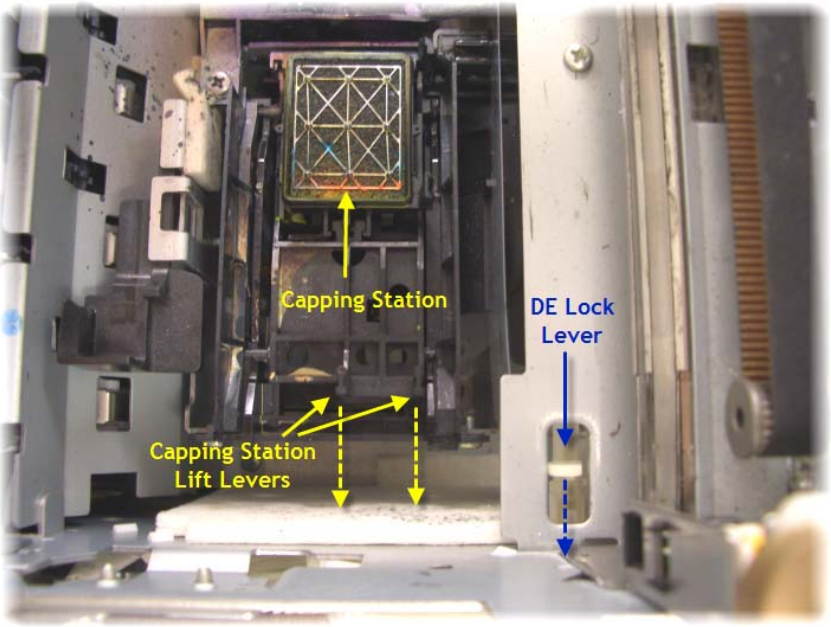
The Wiper Blade plays a critical role in cleaning the Print Head and preventing ink clogging in the Print Head. It is therefore very important that it be kept in good working order. The biggest challenge to keeping the Wiper Blade performing at it's best is the ink itself. Over time, excess ink can build up and harden on and around the Wiper Blade.

The Wiper Blade acts like a car windscreen wiper in wiping ink off the print head. If the Wiper Blade itself has hardened ink on it, then it is unlikely to work very well in cleaning the Print Head.

- Turn the Printing Head Unit off. Remove any platens from the Printing Bed. Release the Print Head Carriage from it's home position on the left hand side of the Head Unit by pressing down on the black knob and gently sliding the Print Head Carriage to the right. This will give you easier access to the Capping Station and Wiper Blade which are positioned beneath the Print Head Carriage's normal home position at the left of the Head Unit.
- The Wiper Blade is normally pushed back to it's rest position during normal operation of the printer (this picture has been taken from the rear of the printer, after the Print Head has been moved away from it's homed position on the capping station):

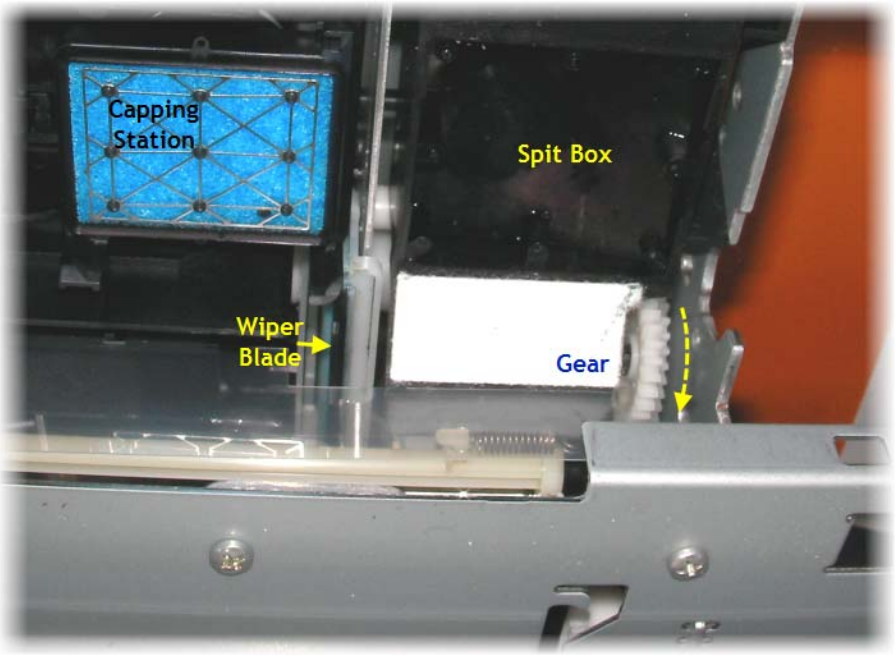


- To access the Wiper Blade to clean it, you will need to manually rotate the Wiper Blade into it's "wiping" position. The process to do this will require two hands:

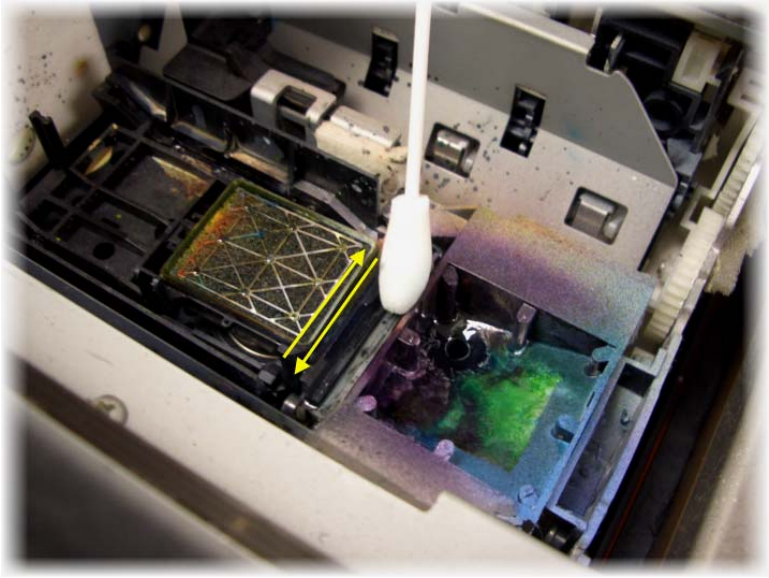



- Using two fingers of the one hand, gently pull back and hold both the DE Lock Lever and the Capping Station Lift Lever towards the side wall of the Viper – as indicated by the direction of the dashed arrows here. This will allow the Capping Station to lift & pull back slightly to allow a clear travel path for the Wiper Blade when it is wound from it's rest position into the active position.

- With the other hand, rotate the gear behind the Spit Box several times in the direction as shown by the dashed arrow in this photograph. The wiper blade will start to travel away from it's rest position towards the capping station. Once the Wiper Blade is in it's "wiping" position, you can release the DE Lock Lever & the Capping Station Lifting Lever.



- Using a foam tip applicator dipped in cleaning / flushing solution (available from your DTG dealer), wipe the excess ink away from the Wiper Blade.
- A pair of long nose tweezers is useful for pulling dried ink / fibres away from the wiper blade.
- Ensure that you return the Print Head to it's home position when you are finished.

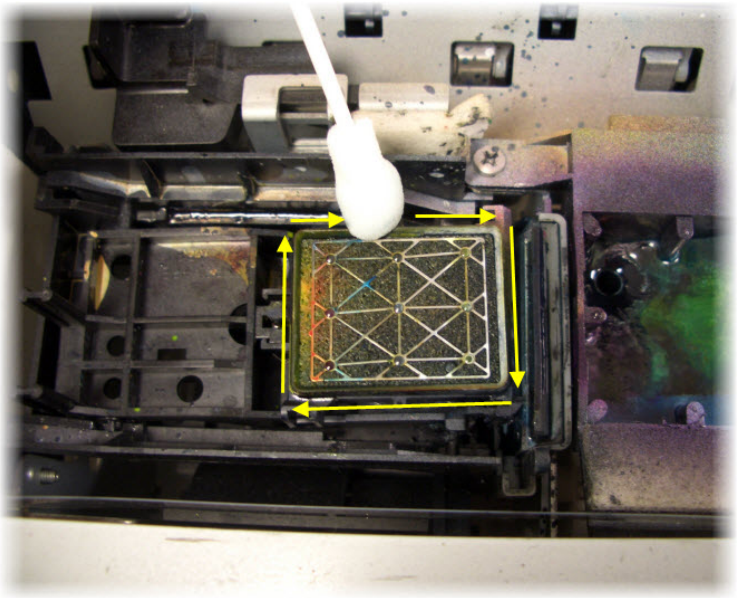


## 8.5 Clean the Capping Station

The Capping Station also plays a critical role in cleaning the Print Head and preventing ink clogging in the Print Head. It is therefore very important that it be kept in good working order. The biggest challenge to keeping the Capping Station performing at it's best is the ink itself. Over time, excess ink can build up and harden on, in and around the Capping Station.

If the outer edges of the Capping Station have dried ink build up on them, this can prevent a good seal around the Print Head when it is in it's "home" position (at the left of the Head Unit), thus allowing air to get in and potentially dry any ink in the Print Head Nozzles.

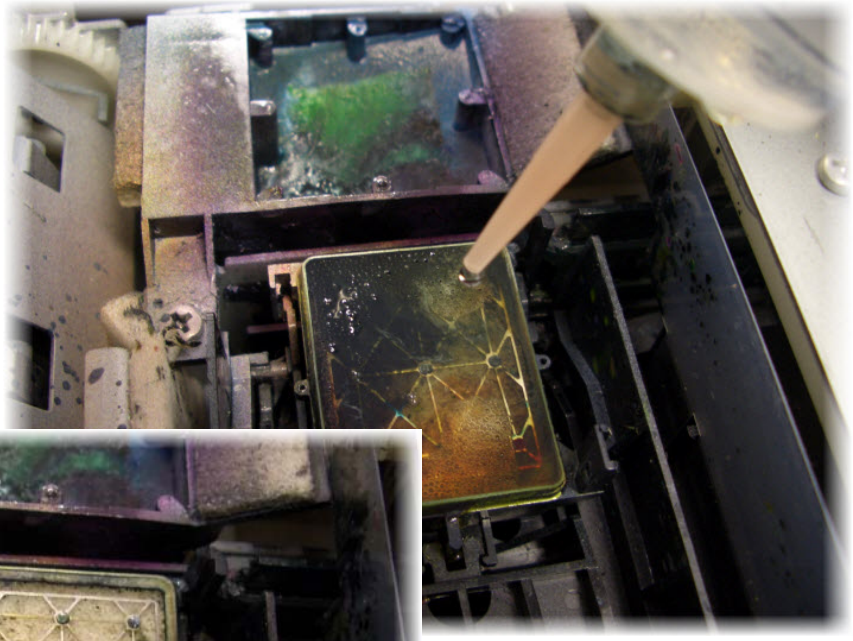
- Turn the Printing Head Unit off. Remove any platens from the Printing Bed. Release the Print Head Carriage from it's home position on the left hand side of the Head Unit by pressing down on the black knob and gently sliding the Print Head Carriage to the right. This will give you easier access to the Capping Station and Wiper Blade which are positioned beneath the Print Head Carriage's normal home position at the left of the Head Unit.

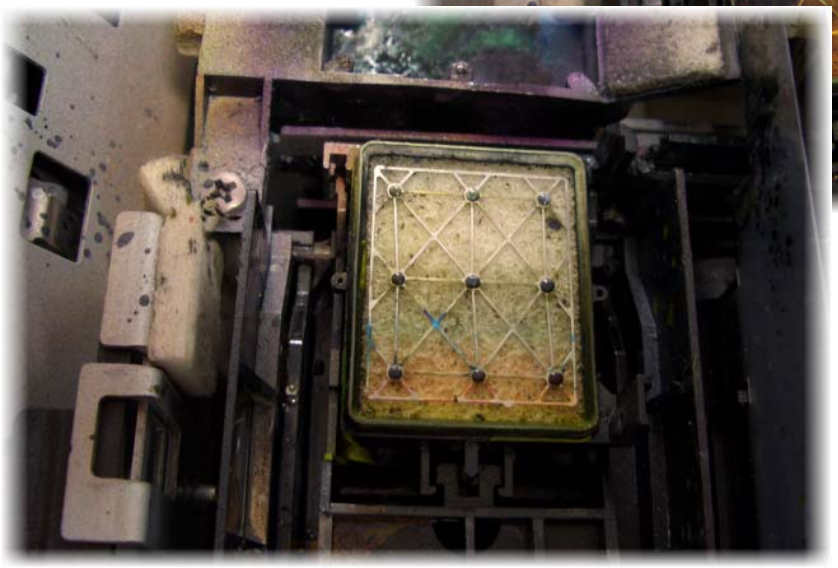


- Using a foam tip applicator moistened with cleaning solution, firmly clean around the rubber lip of the cap in the capping station. Do not apply excess force as you may knock the capping station from the springs which support it.
- Ensure that there are no hairs or fibres lying over the cap as these will also prevent the capping station from functioning correctly.
- A pair of long nose tweezers is also useful for pulling dried ink / fibres away from the capping station seal / perimeter.
- Whilst it is not necessary as such to "clean" the pad in the capping station, it is important to prevent ink from building up & drying underneath the pad and in the tubes that drain the ink from the capping station to the waste ink container. To do this, you will need a syringe & pippet, and also the

Cleaning Pump Assembly (as used in Section 5.6 Drawing Ink from the Ink Bottles to the Print Head).

- Fill the Syringe with 40-50ml of Cleaning Solution.
- Connect the Cleaning Pump Assembly to the waste ink tube (see Section 5.6).
- Use the Syringe to "flood" the Capping Station with Cleaning Solution (take care not to squirt Cleaning Solution anywhere else in the printer, don't overfill the Capping Station)
- Draw on the Cleaning Pump Assembly to "suck" the Cleaning Solution through the Capping Station and into the Cleaning Pump Assembly.
- Repeat the above 2 steps several times to clear the base of the capping station & the drainage tubes of ink.





- This image shows a "cleaned" capping station pad.
- Ensure that you return the Print Head to it's home position when you are finished.

## 8.6 Keep the Spit Box free of ink build up

The Flushing Box (familiarly called the "Spit" Box) captures ink that is sprayed out from the Print Head during the head cleaning process and occasionally during printing. Ink runs down the sides of the spit box and is captured by a waste ink tube which transports the waste ink to the waste ink canister.

- To clean the Spit Box and it's drainage tubes, simply dribble some cleaning solution (using the syringe & pippet) around the side walls of the box. Use some scrap fabric dampened with cleaning solution to wipe the side walls clean, take care to also clean around the hole at the base of the Spit Box. Dispense more cleaning solution into the Spit Box so that it can drain through & help clean the drainage tube from the Spit Box.

## 8.7 Clean the Encoder Strip

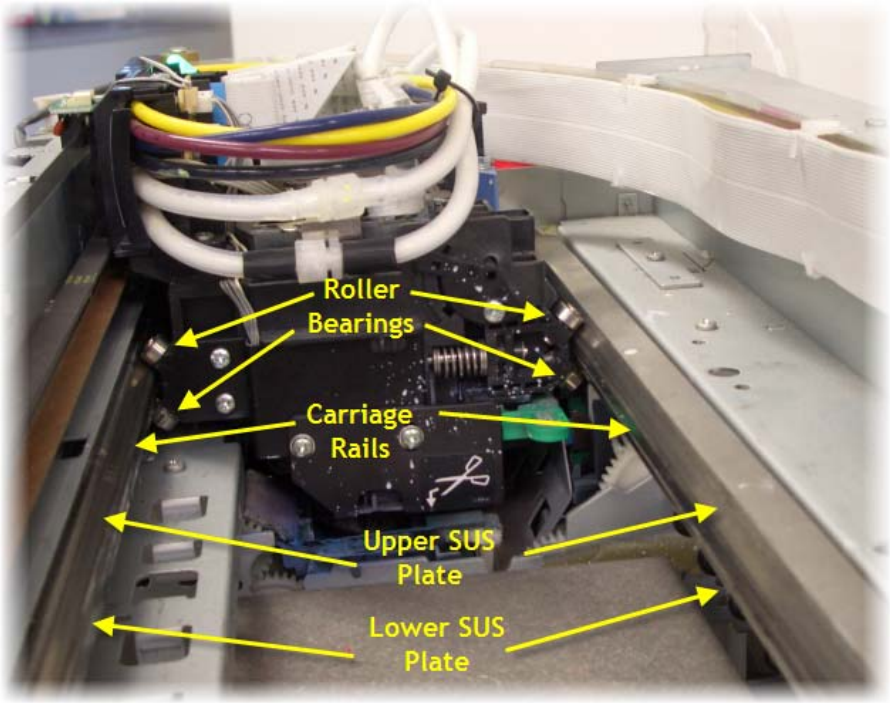
The Encoder Strip is the thin plastic strip that runs in front of the Print Head for the length of the carriage area. It looks to be clear or at least slightly grey in colour, but is in fact clear with hundreds of fine vertical marks on it. There is a sensor that sits in front of the Print Head carriage which "reads" these vertical marks so that the Print Head knows exactly where to spray the ink. You can understand that if this strip gets dirty, the sensor will be unable to read these marks properly and your printer is likely to get "confused". Lint from your garments, ink overspray, and even airborne pre-treatment spray can all contribute to a grime build-up on the Encoder Strip, and it is important that you clean this strip at least weekly, even daily if you have a high daily production volume:


- Turn the Printing Head Unit off. Remove any platens from the Printing Bed.
- Using a soft clean (lint free) cloth, or a sponge tip applicator, moistened with distilled or purified water, or Isopropyl Alcohol (NOT rubbing alcohol), GENTLY rub both faces of the encoder strip. If the cloth or applicator gets dirty, discard it and use a clean one.
- Release the Print Head Carriage from it's home position on the left hand side of the Head Unit by pressing down on the black knob and gently sliding the Print Head Carriage to the right. This will give you easier access to the left hand end of the encoder strip.
- Allow the encoder strip to dry thoroughly before using the printer again.
- Ensure that you return the Print Head to it's home position when you are finished.

## 8.8 Clean & Lubricate the Print Head Carriage Bearings & Rails

Inspect the Print Head Carriage Rails regularly & remove any dust & grime build up with a soft dry cloth. The rails themselves are each partially covered by an upper & lower SUS Plate

In most instances, it will not be necessary to re-grease the CR SUS Plates or the Rails, as the Carriage moves along the Carriage Rails supported by roller bearings. A very small amount of White Lithium based grease can be applied to the CR SUS Plates every 6 months or so if necessary.

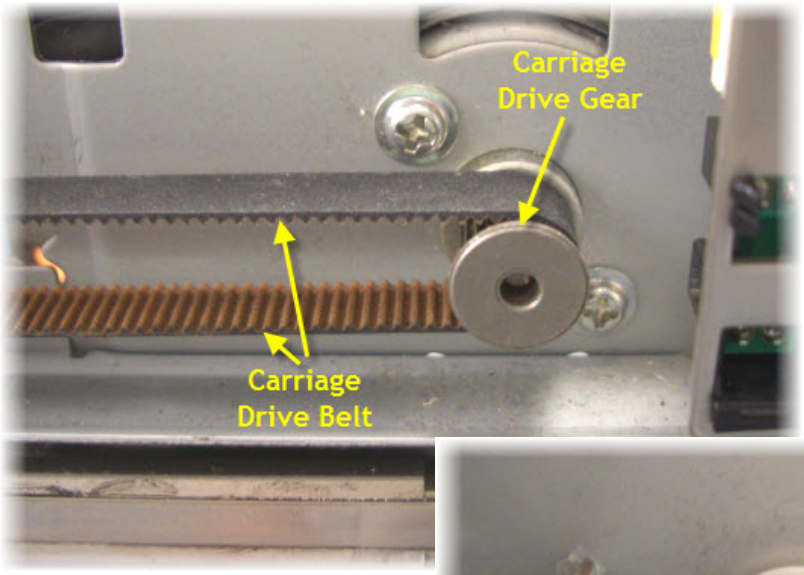


## 8.9 Clean the Print Head Carriage Drive Roller and Belt

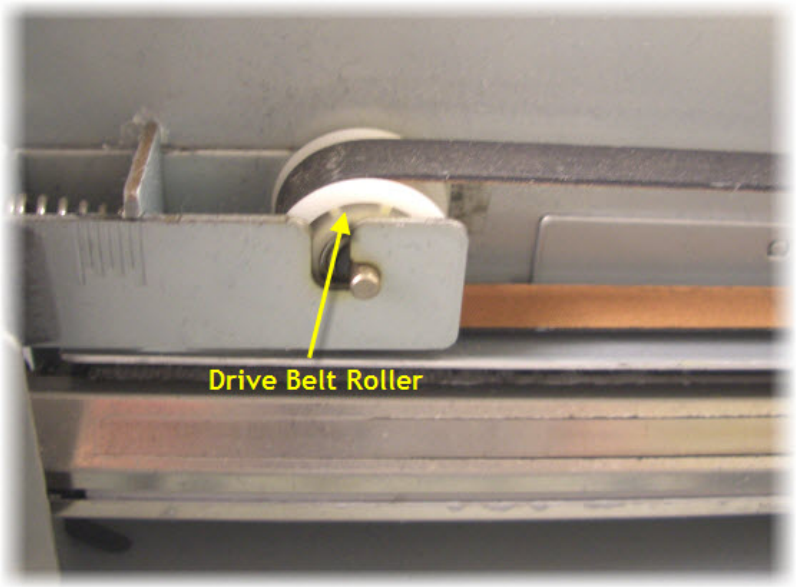
The Carriage Drive Belt, Gear & Roller can collect a build up of pre-treatment, dust & lint in their "teeth". An excessive build up can cause the Print Head to "skip" during printing.

The Drive Belt & Gear are driven by the Carriage Motor, and in turn drive the Print Head itself left & right during the printing process. These components are located along the very front of the printer, the Drive Gear is directly in-front of the Print Head Carriage, the Drive Belt runs the length of the Carriage area, and the Roller is located on the far right side of the printer.

These pictures are taken from the rear of the printer:




- Use a small brush or mini-vacuum cleaner to clean the teeth of the Drive Belt and the Drive Gear. You may also need to use a small sharp object and/or a small pair of tweezers to remove stubborn build up (take care not to scratch or damage the Drive Belt or Gear in doing this).
- The Roller should also be cleaned. This should be done monthly, or more frequently if your DTG Viper™ produces high volumes of output.




Take care not to touch the encoder strip during the cleaning process as it can be easily damaged, and attempt to "capture" any debris removed from the Drive Belt so that it does not contaminate other working components of the printer.

## 8.10 Environmental Conditions

It is important to maintain consistent environmental conditions so that your DTG Viper™ can run at it's best. Inkjet printers like humidity levels of 40 – 70%. They do not like extremes in temperature, so it is best to operate your DTG Viper™ in an air conditioned environment – but not such that fans are blowing directly across the printer (and therefore the print head which may dry the ink in the print head itself). As the ink needs to be stored no less than 5° Celcius (41°F) and no more than 30° Celcius (86°F), this is also the recommended operating & storage temperature range for your DTG Viper™.

Dust is also an enemy of the DTG Viper™ (and in fact any ink-jet printer). The working environment should be relatively dust free.

## 8.11 Clean your DTG Viper™

Lint, dust and pre-treatment overspray can build up and interfere with not only the "internal" workings of the printer, but also the operation of the printer bed. Turn the printer off and clean all accessible surfaces of the printer with mild cleaner and a soft cloth (do not spray the cleaner directly onto the printer, rather onto the cloth) to remove dust & grime build up.

Ensure that any ink spills on or around the ink bottles in particular are cleaned immediately. If spilled ink dries on the ink bottles, specifically near the threads of the bottles or the lids, then that dried ink can potentially flake & transfer into the ink within the ink bottles. Those flakes of ink can make their way through the ink tubing and block the dampers and/or the print head.

*Cover your DTG Viper™*

We recommend that you cover your DTG Viper™ when it is not in use – use a small (clean) tarpaulin or similar to help prevent dust from entering the carriage area of the printer and to help prevent the print head from drying out.

## 8.12 Avoid White Ink Separation

As explained earlier in this User Guide, by it's very nature, white ink (of any brand) is prone to "separation", i.e. the separation of the pigment (the bits that give the white ink it's opacity) from the binder (the bits that bind the pigment to your garments).

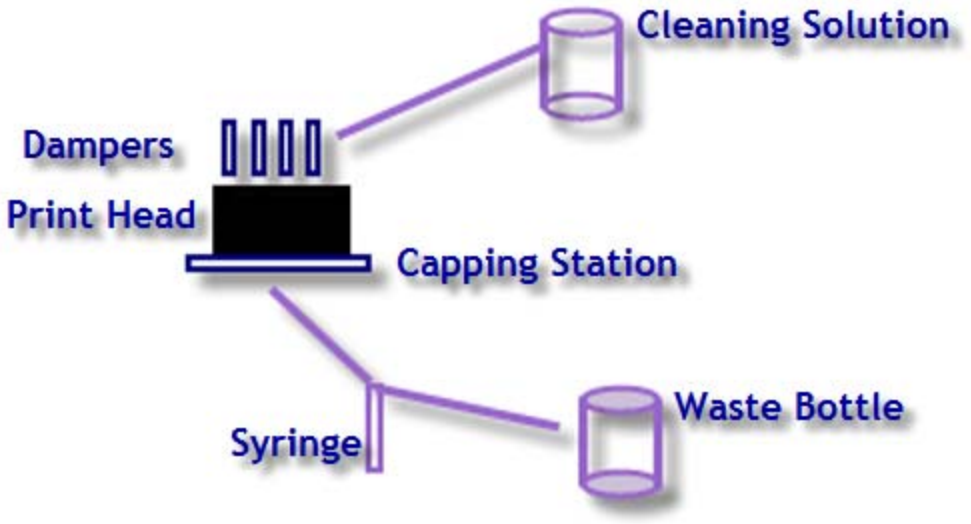
Gently shake any white ink bottles that you have in stock every 2-3 days in order to maximize the shelf life of the white ink.

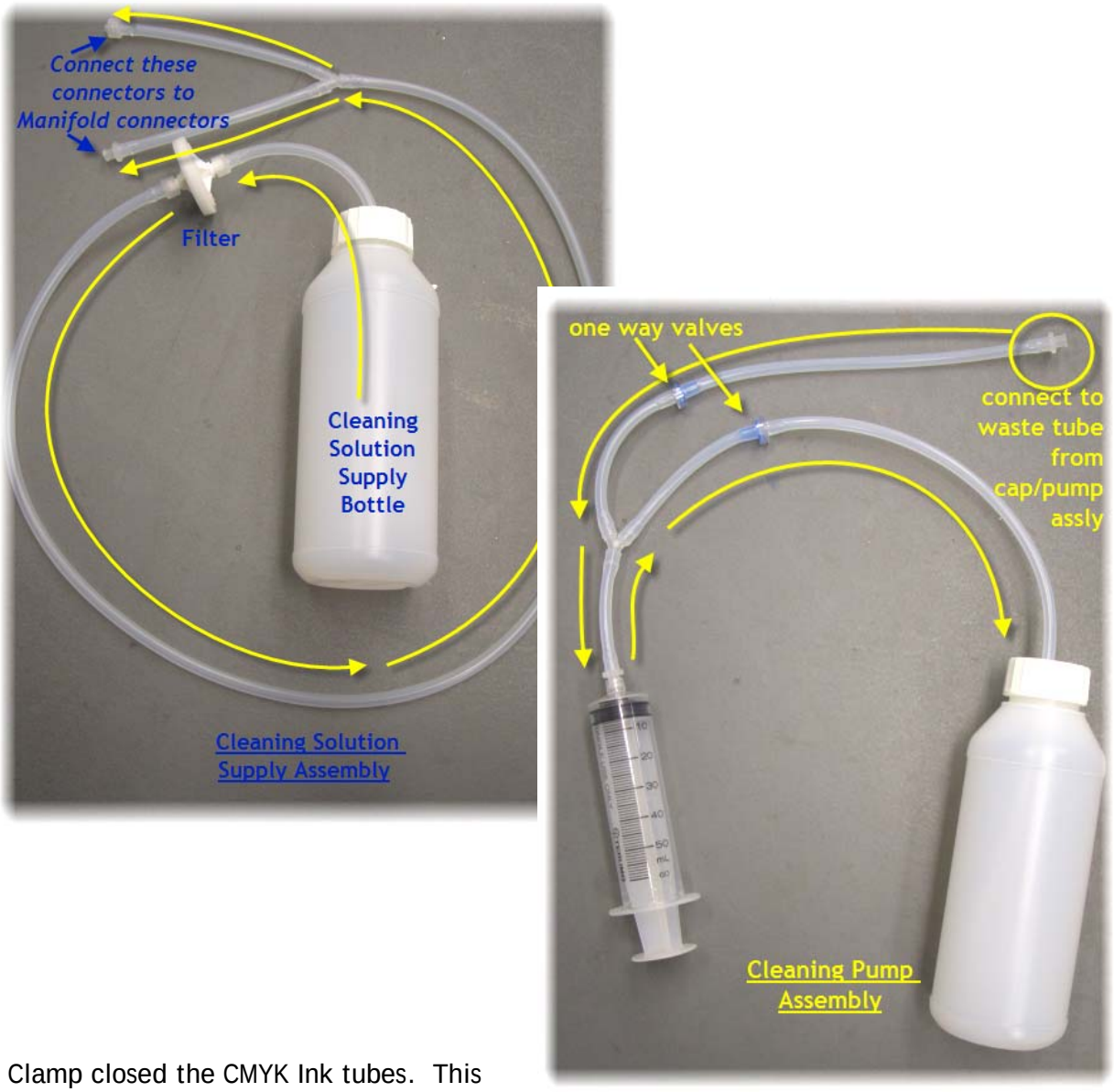
## 8.13 Flush the White Ink Manifold & Dampers every 7 – 10 days

It is necessary to regularly flush the White Ink Manifold, Dampers & print head channels in order to minimize any white ink sedimentation in these areas.

Included with your DTG Viper™ are the manual Cleaning Pump Assembly (described in Section 5.6) and the Cleaning Solution Supply Assembly.

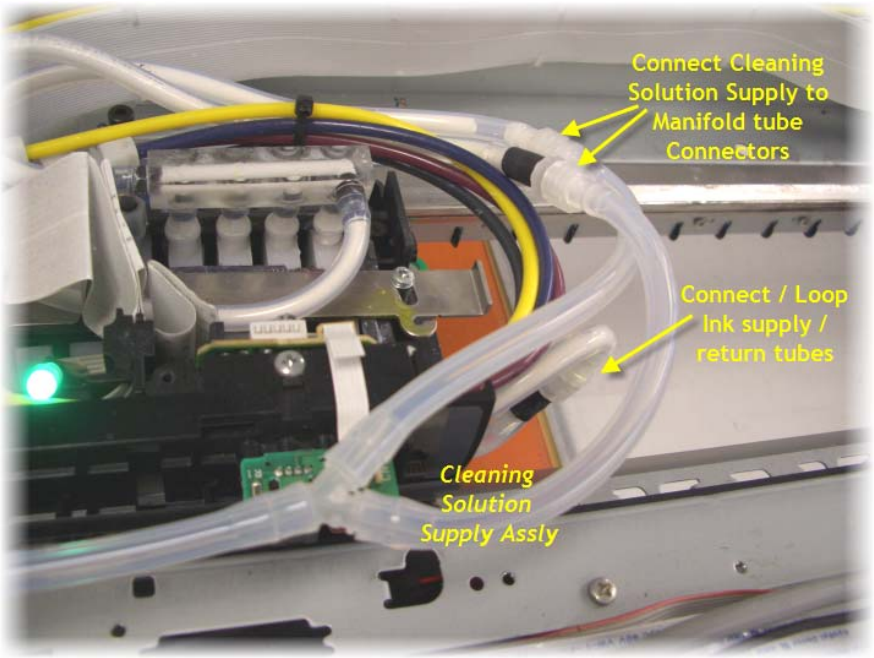
The basic concept of the manual cleaning kit is that cleaning solution is supplied directly to the white ink manifold, dampers & print head (Cleaning Solution Supply Assembly), and suction is applied via the capping / pump assembly to draw the cleaning solution through the dampers & print head (and capping /pump assembly) and into a waste collection bottle (Manual Cleaning Pump Assembly).






- Clamp closed the CMYK Ink tubes. This will minimize ink wastage.
- Ensure that the clamps on the White ink tubes are in the open position.
- Disconnect the Capping Station Waste Ink Tube from the Waste Ink Bottle & connect it to the manual Cleaning Pump Assembly (refer Section 5.6).
- Ensure that the Cleaning Solution Supply Assly is clean.
- Fill the Cleaning Solution Supply Bottle with Cleaning Solution
- Disconnect power to the WIMS and ensure that the WIMS system is not cycling, and that the print head is located on the capping station (normal home position). Disconnect the ink supply tubes near the damper manifold and connect to each other to create a loop so that the ink can continue to be cycled, even while the cleaning kit is being used. Reconnect power to the WIMS to allow the WIMS to resume the ink cycling.

- Connect the connectors on the Cleaning Solution Supply assembly to the connectors on the two shorter tubes coming from the manifold.
- Use the syringe on the Cleaning Pump Assembly as described in Section 5.6, in this case, instead of drawing ink through the ink lines, you will be drawing the cleaning solution from the Cleaning Solution Supply Assembly through the Manifold, Dampers & White Ink Channels in the Print Head. Continue this process until the fluid being collected in the bottle of the Cleaning Pump Assembly runs clear. This indicates that all white ink in the Manifold, Dampers and the White Ink Channels of the Print Head has been flushed through. Be sure to empty the bottle of the Cleaning Pump Assembly as necessary.




- Disconnect power from the WIMS unit.
- Disconnect the Cleaning Solution Supply Assembly from the Manifold connectors, disconnect the Ink supply & return tubes from each other & connect the Manifold connectors to the Ink supply & return tubes so that the WIMS flow is complete across the Manifold.
- Use the syringe on the Cleaning Pump Assembly to draw any remaining cleaning solution from the Manifold, Dampers & White Ink Channels of the Print Head, and to re-prime these components with White Ink.
- Disconnect the Cleaning Pump Assembly from the Capping Station Waste Ink Tube, reconnect the Capping Station Waste Ink Tube to the Waste Ink Container.
- Un-clamp the CMYK ink tubes
- Reconnect power to the WIMS unit
- Execute a Head Clean (Section 6.4)

## 8.14 Empty & Wash White Ink Canister

White Ink, as described previously, is prone to "settling". The stirrer on the WIMS & the circulation pump do much to minimize this sedimentation of the white ink, however there is still likely to be a sedimentation build up in the base of the white ink canister over time.

At least monthly, disconnect the power to the WIMS system, clamp the white ink tubes closed, and empty the white ink canister (empty contents back into clean ink supply bottle temporarily). Thoroughly clean & dry the white ink canister & the underside & thread of the lid to the white ink canister. Re-fill the canister, unclamp the white ink tubes & re-connect power to the WIMS unit. Allow the ink to circulate again for ½ hour or so before printing.

## 8.15 Ink Levels

It is recommended that you keep your ink bottles (particularly the white ink) ½ to ¾ full at all times. It is important that the white ink system in particular does not suck dry.

## 8.16 Pre-Treat garments away from the printer

The pre-treatment for printing of white ink is very sticky, and airborne particles of the spray can very easily find their way into, and clog up the moving parts of your DTG Viper.

For this reason, we recommend that you spray the white ink pre-treatment to your garments in a separate room, or at the very least, make up a "spray booth" to contain the spray so that it does not contaminate the printer. The spray station should be at least 5 metres (15 feet) away from the DTG Viper™, with forced extraction of the pre treat vapours.

## 8.17 Decline in Print Quality

If the quality of your printed images declines, either with dots or lines missing, or you have an unexpectedly light print, you may need to clean the print head to unclog the ink nozzles. Letting any of the ink bottles run dry or leaving the printer sitting without use for a few days may also dry out the ink nozzles.

Cleaning the Print Head is an easy process. All you need to do is hold down the **Menu** button on the Control Panel of the Printer for **FOUR SECONDS** or go to the Epson Stylus Pro 4880 printer driver on your computer and select the **Utilities** tab from Printing Preferences. This will give you slightly more control over the cleaning process.

Refer to Section 6.4 above for further details.

*Please Note: Never turn off the printer while the power light is flashing (unless otherwise instructed in this manual or by an authorized DTG representative) as this may damage the printer.*

*Please Note: It is possible to do a head cleaning at any time even when the printer is printing. Printing will stop while it cleans the heads and resume where it stopped when cleaning is finished.*

*Please Note: It is recommended that you do a head cleaning if you see any drops of ink on the garments you are printing or if the Print Head comes in contact with the garment – the cleaning process will also clean the bottom of the Print Head.*

## 8.18 Aligning the Print Head

If you notice any vertical or misaligned lines on your prints, or banding of any kind, you will need to do a Print Head Alignment. There are several ways in which the Print Head may become mis-aligned – it could simply be through normal use, or if the Print Head hits a garment or the Platen during printing, or during transportation of the unit. If the Print Head has hit hard on a garment, on the Platen or any other hard surface it may be permanently damaged or misaligned and will need to be replaced.

In order to best align the print head, you must firstly make sure that you have a "clean" Print Head – a good Nozzle Check Pattern is a good indication of this (see Section 6.4 above).

Refer to Section 6.7 above for detailed instructions.

## 8.19 Waste Ink Bottle Maintenance

During the Head Cleaning process your DTG Viper™ forces ink through the print head. This excess ink goes into a holding bottle called the **Waste Ink Bottle**, accessible through the door on the left side of the printer below the control panel. Check this bottle regularly, and empty it when it is getting full or before an ink flush or power clean procedure. Remember you must comply with local regulations in disposing of its contents.

## 8.20 If Printer is Not Used for Some Time

If the printer is to be left idle for a long period of time (1 – 2 weeks), then you should flush the system with flushing solution – in particular, the WIMS system. Please see section 8.13 and below for instructions on flushing the Manifold, Dampers & Print Head of White ink.

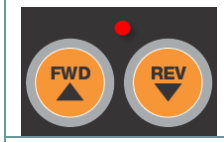
- Clamp closed the CMYK Ink tubes. This will minimize ink wastage.
- Ensure that the clamps on the White ink tubes are in the open position.
- Disconnect the Capping Station Waste Ink Tube from the Waste Ink Bottle & connect it to the manual Cleaning Pump Assembly (refer Section 5.6).
- Ensure that the Cleaning Solution Supply Assly is clean.
- Fill the Cleaning Solution Supply Bottle with Cleaning Solution
- Disconnect power to the WIMS and ensure that the WIMS system is not cycling, and that the print head is located on the capping station (normal home position). Disconnect the ink supply tubes near the damper manifold and connect to each other to create a loop so that the ink can continue to be cycled, even while the cleaning kit is being used.
- Reconnect power to the WIMS to allow the WIMS to resume the ink cycling.
- Connect the connectors on the Cleaning Solution Supply assembly to the connectors on the two shorter tubes coming from the manifold.
- Use the syringe on the Cleaning Pump Assembly as described in Section 5.6, in this case, instead of drawing ink through the ink lines, you will be drawing the cleaning solution from the Cleaning Solution Supply Assembly through the Manifold, Dampers & White Ink Channels in the Print Head. Continue this process until the fluid being collected in the bottle of the Cleaning Pump Assembly runs clear. This indicates that all white ink in the Manifold, Dampers and the White Ink Channels of the Print Head has been flushed through. Be sure to empty the bottle of the Cleaning Pump Assembly as necessary.
- Un-clamp the CMYK ink tubes
- Execute a Head Clean (Section 6.4)
- Disconnect the Cleaning Solution Supply Assembly from the Manifold connectors, re-connect the Manifold connectors to each other to create a closed loop across the manifold, still containing the Cleaning Solution.
- Disconnect the Cleaning Pump Assembly from the Capping Station Waste Ink Tube, reconnect the Capping Station Waste Ink Tube to the Waste Ink Container.
- Clean all components of the Cleaning Pump Assembly.

*Where the printer is not going to be used for very extended periods of time, it will be important to flush the printer completely of all inks. Please contact your authorized DTG representative for detailed instructions on this process*

# 9 Trouble-shooting

## 9.1 Control Panel Light Indicators

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
|   Pause Light | | | |
| solid green | The printer is in pause mode. | Press the Pause Button | n/a |
| flashing green | The printer is printing<br>The printer is cleaning the print head | n/a<br>wait for the cleaning process to finish | n/a<br>n/a |
| light off | the printer is ready to print data | n/a | n/a |
|   Ink Light | | | |
| solid red | The ink chip count has reached it's limit & requires resetting<br>There is an error with the ink chip that requires resetting<br>The maintenance tank chip count has reached it's limit & requires | Check the LCD display to identify the cartridge and/or maintenance (waste) tank with the error, use the chip resetter to reset the chip<br>If the reset process does not clear the error, replace the cartridge | n/a |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| | resetting | | |
| ■ flashing red | ■ The ink chip count is approaching it's limit & requires resetting.<br>■ The maintenance tank chip count is approaching it's limit & requires resetting | ■ Check the LCD display to identify the cartridge and/or maintenance (waste) tank with the error, use the chip resetter to reset the chip | ■ n/a |
|  Paper Light | ■ This light will not be active during normal operation of the DTG ViperTM | | |
| Pause, Ink & Paper lights all flashing | ■ Printer needs service - contact your authorized DTG Distributor | ■ Turn printer off, both from the control panel & at the mains power switch at the rear of the printer. Leave for 30 seconds, then turn power back on. | ■ n/a |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
|  Gap Light (Green) | ■ A Green Gap Light indicates that the Gap Sensor is on in “auto” mode. In this mode, the Printing Bed (and therefore printing media on the Printing Bed) will be lowered automatically if the Gap Sensor is “triggered” by something on the Printing Bed – this may be a wrinkle in the fabric or a foreign object that has been left on the Printing Bed by mistake. This automatic lowering of the Printing Bed minimizes the risk of the Print Head striking any object during the print process. There is considerable risk of permanent damage to the Print Head if it should strike anything during the printing process.<br>■ | ■ n/a | ■ n/a |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
|  Gap Light (Amber) | ■ An Amber Gap Light indicates that the auto-lowering of the Print Bed in response to the Gap Sensor has been disabled. In this mode, the Printing Bed will not lower automatically as it does in “auto” mode. The Printing Bed can be lowered manually by the Down button, however the Up button is disabled in this mode to lessen the risk of the Print Head striking any object during the print process.<br>■ | ■ Press the Gap button to turn the Gap Sensor back on | ■ n/a |
|  Gap Light (Red) | ■ A Red Gap Light indicates that the Gap Sensor is “triggered”<br>■<br>■ | ■ Check the media, ensure that it is flat & smooth (no wrinkles) | ■ Ensure that the media is flat & smooth, with no wrinkles or foreign object on the media |

## 9.2 Control Panel Messages

| Message | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| INK LOW | ■ Ink count on one or more cartridges is approaching the limit | ■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail | ■ n/a |
| INVALID INK CRTG | ■ Incorrect cartridge in slot<br>■ Faulty / expired chip on cartridge | ■ Ensure the correct cartridges are in the correct slots<br>■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Replace ink chip / cartridge | ■ Ensure the correct cartridges are in the correct slots |
| LOWER INK LEVERS | ■ One or both ink levers are raised | ■ Lower the ink lever(s). If both levers are already lowered, wait a few minutes as the printer may need to “catch up” with the levers’ setting | ■ n/a |

| Message | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| MNT REQ. nnnn | ■ various | ■ Power down the printer, both from the control panel, and at the mains power switch at the rear of the printer. Restart the printer.<br>■ If the error persists, contact your authorized DTG Distributor or Technician for further information. | ■ n/a |
| MNT TK FULL | ■ the waste ink count has reached the limit for the maintenance tank | ■ Reset the chip on the maintenance tank (refer Section 6.9) | ■ n/a |
| MNT TK NEAR FULL | ■ the waste ink count is approaching the limit for the maintenance tank | ■ Reset the chip on the maintenance tank (refer Section 6.9) | ■ n/a |
| NO INK CRTG | ■ the printer is unable to detect one or more cartridges | ■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Turn printer off, then on again after resetting the cartridge<br>■ Replace ink chip / cartridge | ■ n/a |

| Message | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| NO MNT TANK | ■ the printer is unable to detect the maintenance tank | ■ remove & replace the maintenance tank (in order to make good contact between the chip on the maintenance tank and the chip reader)<br>■ Reset the chip on the maintenance tank (refer Section 6.9)<br>■ Replace maintenance tank | ■ n/a |
| NON-GENUINE | ■ one or more cartridges has been reset, printer now requesting “permission” to proceed with non-genuine cartridges | ■ follow Control Panel procedure described on page 51 to clear this message | ■ n/a |
| REPLACE INK CRTG | ■ Ink count on one or more cartridges has reached it’s limit<br>■ Faulty / expired chip on cartridge | ■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Turn printer off, then on again after resetting the cartridge<br>■ Replace ink chip / cartridge | ■ n/a |

| Message | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| REPLACE INK CRTG | ■ Ink count on one or more cartridges has reached it's limit<br>■ Faulty / expired chip on cartridge | ■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Turn printer off, then on again after resetting the cartridge<br>■ Replace ink chip / cartridge | ■ n/a |
| SERVICE REQ. | ■ The print head is locked<br>■ An error has occurred | ■ Remove any protective materials & pull the green tab on the right hand side of the print head to release the print head<br>■ Turn the printer off and unplug the power cable. Let the printer sit for a while, then try reconnecting the power cable and turning the printer back on. If this message appears on the LCD again, note the error number & contact your authorized DTG Distributor / technician. | ■ n/a |

| Message | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| SET INK CRTG | ■ Chip on cartridge requires resetting<br>■ Faulty / expired chip on cartridge | ■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Turn printer off, then on again after resetting the cartridge<br>■ Replace ink chip / cartridge | ■ n/a |
| WRONG INK CRTG | ■ Incorrect cartridge in slot<br>■ Faulty / expired chip on cartridge | ■ Ensure the correct cartridges are in the correct slots<br>■ Black Cartridges can be reset by raising, then lowering the Ink Levers, White Cartridges will need to be reset using the Chip Resetter. Identify the cartridge(s) to be reset by referring to the control panel LCD. See page 49 for further detail<br>■ Replace ink chip / cartridge | ■ Ensure the correct cartridges are in the correct slots |

## 9.3 Problems during Printing

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Nothing happens when you send a print job from the computer | ■ Printer not powered on<br>■ Printer not connected to the computer via USB cable<br>■ Printer not ready<br>■ Error with RIP program | ■ Ensure the printer is turned on, and that the Power and White Ready / Color Readylights are both solid<br>■ Ensure that the USB cable is connected securely<br>■ Ensure that none of the Ink Lights is flashing or solid (refer to symptoms above)<br>■ Check error messages in RIP, resolve according to the RIP Easy Start Guide / User Manual | ■ See Remedies |
| Printer stops in the middle of a print | ■ Communication issues between computer / printer<br>■ Corrupt print data<br>■ Ink error (see above) | ■ Restart printer and computer<br>■ Remove other USB devices from computer USB ports<br>■ Replace USB cable<br>■ Try another image file<br>■ Uninstall & re-install printer driver | ■ Do not overload USB ports on your computer<br>■ Good quality, short (no more than 2mtr) USB cable |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Print jobs take a long time to print | ■ Excessively large image file<br>■ Large spool file created by Corel | ■ Flatten layers in your image file<br>■ Reduce the resolution in your image file (200-300dpi is adequate for printing to t-shirts)<br>■ Try to print from another application (Adobe Illustrator or Photoshop, Acrobat Reader etc.) | ■ Keep the image file sizes and resolutions small where possible. |
| Images print “out of registration” between white & colour layers | ■ Incorrect setting in RIP<br>■ Dirty Encoder Strip<br>■ Dirty Encoder Sensor (behind the Print Head Carriage)<br>■ Drive Belt and/or Roller have a build up of lint / dirt causing the Drive Belt to slip<br>■ Platen has moved between layers | ■ Correct registration offset in RIP<br>■ Clean the Encoder strip (Section 0)<br>■ Clean the Drive Belt & Driver roller (Section 8.9)<br>■ Check the connections & positioning of the Encoder Wheel / Sensor – contact your DTG Dealer / Distributor for direction | ■ Undertake regular Printer Care & Maintenance as per Section 8<br>■ Take care not to forcibly “bump” the machine during operation or transportation<br>■ Centre the platen on the conveyor belt<br>■ Take care that the platen is not bumped or moved during printing |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Cannot achieve a "good" Nozzle Check test, despite several Head Cleanings | ■ Nozzles in the Print Head are blocked with dried ink<br>■ Air in the Print Head / Dampers / Ink lines<br>■ Ink levels in Ink Bottles too low<br>■ Damaged or poorly seated damper(s) / cartridges<br>■ Ink tube clamps closed<br>■ CMYK air pump not functioning<br>■ WIMS pump not functioning | ■ Fill Ink Bottles to between 50% and 75%<br>■ Clean Wiper Blade & Capping Assembly (Section 8.4)<br>■ Open closed ink tube clamps<br>■ Test CMYK air pump, replace if necessary<br>■ Test WIMS pump, replace if necessary<br>■ Inspect Dampers / Cartridges for damage / blockages, replace where necessary (see your DTG Technician / Distributor for direction)<br>■ Leave a few drops of flushing / cleaning solution in the capping station for a few hours or overnight to soften any dried ink on the face of print head | ■ Undertake regular Printer Care & Maintenance as per Section 8<br>■ Take extra care when working with the Dampers/ Cartridges and / or Print Head area. Dampers are quite fragile and can be easily damaged, as can the "nipples" or "spikes" that the Dampers sit on, on top of the Print Head |
| Images print with large bands in the print, or only partial images | ■ Dirty Encoder Strip<br>■ Dirty Encoder Sensor (behind the Print Head Carriage)<br>■ Drive Belt and/or Roller have a build up of lint / dirt causing the Drive Belt to slip<br>■ Encoder Wheel / Sensor (Gearbox) have been knocked out of position / dirty | ■ Clean the Encoder strip (Section 0)<br>■ Clean the Drive Belt & Driver roller (Section 8.9)<br>■ Check the connections & positioning of the Encoder Wheel / Sensor – contact your DTG Dealer / Agent for direction | ■ Undertake regular Printer Care & Maintenance as per Section 8<br>■ Take care not to forcibly "bump" the machine during operation or transportation |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Inconsistent print quality in the one print job | ■ Air in the Print Head / Dampers / Ink lines<br>■ Ink levels in Ink Bottles too low<br>■ Damaged or poorly seated damper(s) / cartridges<br>■ Ink tube clamps closed<br>■ CMYK air pump not functioning<br>■ WIMS pump not functioning Insufficient siphon established after filling / re-filling inks, or after longer periods of printer inactivity<br>■ Ink "starvation" | ■ Fill Ink Bottles to between 50% and 75%<br>■ Open closed ink tube clamps<br>■ Test CMYK air pump, replace if necessary<br>■ Test WIMS pump, replace if necessary<br>■ Inspect Dampers / Cartridges for damage / blockages, replace where necessary (see your DTG Technician / Distributor for direction)<br>■ Establish a good "siphon" after initial or subsequent INK FILLs, or after longer periods of printer inactivity by running a few Head Cleans.<br>■ Clean Capping Station to ensure good suction when the Print Head is capped. | ■ Undertake regular Printer Care & Maintenance as per Section 8<br>■ Establish a good "siphon" after initial or subsequent INK FILLs, or after longer periods of printer inactivity by running a few Head Cleans. |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| White Underbase is not "thick" enough | ■ Improper pre-treatment (insufficient pre treat, uneven spray, garment not pressed heavily enough, etc.)<br>■ Not all white ink channels / nozzles printing<br>■ White ink has "separated" in ink lines & dampers<br>■ Underbase settings in RIP not set up correctly<br>■ Ink tube clamps closed<br>■ WIMS filter blocked | ■ Pre-treatment method is an individual thing. Use the guidelines in Section **Error! Reference source not found.** to develop your own comfortable & successful method for pre-treatment of garments for white ink printing<br>■ Print a Nozzle Check pattern to determine if all Channels / Nozzles are firing (Section 8.2)<br>■ Ensure White ink is circulating properly in the WIMS<br>■ Check & correct White Ink Underbase settings in your RIP software. White Ink Underbase resolution should be at minimum 1440 x 720 (1 pass)<br>■ Replace WIMS filter | ■ Undertake regular Printer Care & Maintenance as per Section 8<br>■ Double check print settings before sending a print job through to the printer. |
| Prints are blurry or fuzzy | ■ Image resolution is too low<br>■ Media to be printed on is set too low below the Print Head<br>■ Print Head may be out of alignment | ■ Re-sample the image in the graphics software to a higher resolution<br>■ Raise the Printer Bed so that the Media (T-shirt, etc.) sits just below the gap sensor trigger point<br>■ Undertake a Print Head Alignment (see Section 8.18) | ■ Use good quality graphics – image at the final print size should be between 200 and 300dpi<br>■ Prepare media correctly so that it is smooth & flat on platen so as not to trigger the gap sensor unnecessarily |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Prints have incorrect colours (eg. Greens are yellow or blue, Purples are blue or pink etc.) | ■ Not all channels / nozzles are printing properly | ■ See above for good Nozzle Check | ■ See above for good Nozzle Check |
| White Ink is printing "muddy" white colour | ■ Waste Ink from capping station has "back-flushed" into Print Head or Dampers | ■ Purge dirty ink from Print Head & Dampers by a series of Print Head Cleans<br>■ Clean Capping Station | ■ Check that Waste Ink (during Print Head Clean etc.) is draining from the Capping Station correctly |
| Banding in Print | ■ Blocked Print Head Nozzles<br>■ Printing at too low a resolution<br>■ Print Head out of Horizontal alignment | ■ See good Nozzle Check above<br>■ Increase Print resolution to >720dpi, switch to Uni-directional printing<br>■ Align the Print Head (see Section 8.18) | ■ See Good Nozzle Check above |
| Ink drops / splatters on printed garments | ■ Damaged Print Head (Print Head may have struck Shirt Holder or Print Bed<br>■ Dirty capping station and / or Wiper Blade<br>■ Fibres or other matter collected around Print Head causing ink to "wick" on to garments<br>■ Ink bottles over-filled causing excess siphon | ■ Replace Print Head<br>■ Clean Capping Station and Wiper Blade (see Section 8.4)<br>■ Carefully clean the Print Head Face (see Section 8.3)<br>■ Bring ink levels in Ink Bottles to between 50 and 75% full | ■ Undertake regular Printer Care & Maintenance as per Section 8 |

## 9.4 Problems with Curing / Washing

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Prints loose too much vibrancy after Curing | ■ Too high a polyester content in fabric, particularly with white ink prints<br>■ Too much pressure on heat press<br>■ Temperature on heat press is too high<br>■ Dirty Teflon / Silicon protective sheet used during curing process | ■ n/a | ■ Best results are achieved with 100% cotton. Garments requiring white ink should have only a low (<35%) polyester content<br>■ When curing the garment in a heat press, the press should rest firmly over the garment & protective sheet to allow moisture from the inks to escape and properly cure<br>■ Check the accuracy of the heat press temperature<br>■ Follow the temperature and curing guidelines as per Section 7<br>■ Wash protective sheet with soapy water, use a dedicated sheet for pressing of pre-treated garment, and another for curing of printed garment<br>■ Replace protective sheet |

| Symptom | Possible Causes | Remedies | Prevention |
|---|---|---|---|
| Prints peel or rub off, wash out, or fade after only a few washes | ■ Too high a polyester content in fabric, particularly with white ink prints<br>■ Too much pre-treatment<br>■ Too much or too little pressure on heat press during curing<br>■ Temperature on heat press is too high or too low<br>■ Improper pre-treatment of garment<br>■ Improper wash settings | ■ **n/a** | ■ Best results are achieved with 100% cotton. Garments requiring white ink should have only a low (<35%) polyester content<br>■ When curing the garment in a heat press, the press should rest firmly over the garment & protective sheet to allow moisture from the inks to escape and properly cure<br>■ Check the accuracy of the heat press temperature<br>■ Follow the temperature and curing guidelines as per Section 7<br>■ Follow the guidelines for pre-treatment as per section 7<br>■ Printed garments should be washed in cold water (garment turned inside-out). Delicate dryer settings |

# 10 Transporting or Storing Your Printer

It is extremely important you observe the following before transporting or an extended shut down of your DTG Viper™:

## 10.1 Preparing the printer for transportation / storage

If the printer is to be transported over a long distance, and/or by a common carrier (where you cannot control the "care" with which the printer is transported) it is best to flush the printer of ink to avoid the possibility of ink spills and the ink drying in the print head.

Similarly, if the printer is not to be used for long periods of time, particulary where sample printing cannot be undertaken on a regular basis, it is best to flush the printer of ink to help diminish the risk of ink drying in the ink tubes / dampers / cartridges / Print Head.

Please contact your DTG Distributor / technician for full instructions on completely flushing your printer.

# 11 Product Support

## Our Support Policy

We offer FREE support for the DTG Viper™. Operating the unit is relatively easy, particularly if you follow the guidelines covered in this User Guide.

Support can be obtained by contacting the DTG Dealer or Distributor from whom you purchased your DTG Viper™. Support will generally be available during the Dealer or Distributor's normal business hours.

Before calling, please ensure that you have checked this User Guide for possible resolutions to your issue. Please have your serial number at hand with specific details of the problem. If you have received an error message, please include the error number, and details of what seemed to cause the problem. You may find it easier to fax your questions before calling our support line.

## Epson Support

The DTG Viper™ is NOT supported by Epson as it is a highly modified version of an Epson Stylus Pro 4880 with hundreds of additional parts that are not provided by Epson. Epson will not provide support for the driver. You must obtain any support for the Epson Driver and any internal Epson components you require from your DTG Dealer / Distributor.

## Third Party Software Support

We will make every attempt to help with printing from programs like Corel Draw, Photoshop, Illustrator, etc., but we do not offer free support or training on these programs.

# 12 Requirements for PC

## Minimum System Requirements for Windows

• Microsoft Windows compatible PC with a Pentium 4 processor

Running Windows XP or higher.

• A minimum of 1Gb of RAM is recommended.

• A minimum of 20Gb on your hard disk.

• A display monitor with high resolution.

• CD-ROM or DVD drives for installing the Printer Drivers.

• USB connections: you will require a USB port for the printer itself (must be direct to the computer, not via a USB hub. You will possibly need a 2nd USB port for the security device associated with the RIP software

*Please Note: your RIP and graphics software will have additional system requirements. Please refer to your DTG Distributor / Dealer for full specifications.*

# Limited Warranty Registration Card

Remove this page and copy and mail or fax within 10 days of receipt of machine to:

**Impression Technology Pty Ltd**
Unit 23/9 Powells Rd
Brookvale NSW 2100
Australia
Phone: +61 2 9905 0420
Fax: +61 2 9907 4744
Email: support@dtgdigital.com

Company Name:_____

Contact Name:_____

Address:_____

City:_____ State/Province:_____

Zip/Postal Code:_____ Country:_____

Phone:_____ Fax:_____

Email:_____

Product: **DTG Viper™** Serial Number:_____

Date Purchased:_____ Date Received:_____

Purchased From:_____

Thank you for purchasing a DTG Viper™!

Document Revisions:

V2

Removed reference to Auto Cleaning Pump

Updated Bi-D adjustment procedure

Included reference to AOD

Included reference to white cartridges

Updated /completed maintenance procedures

Updated / completed troubleshooting guide