

DS-4000 ***FAQ's***



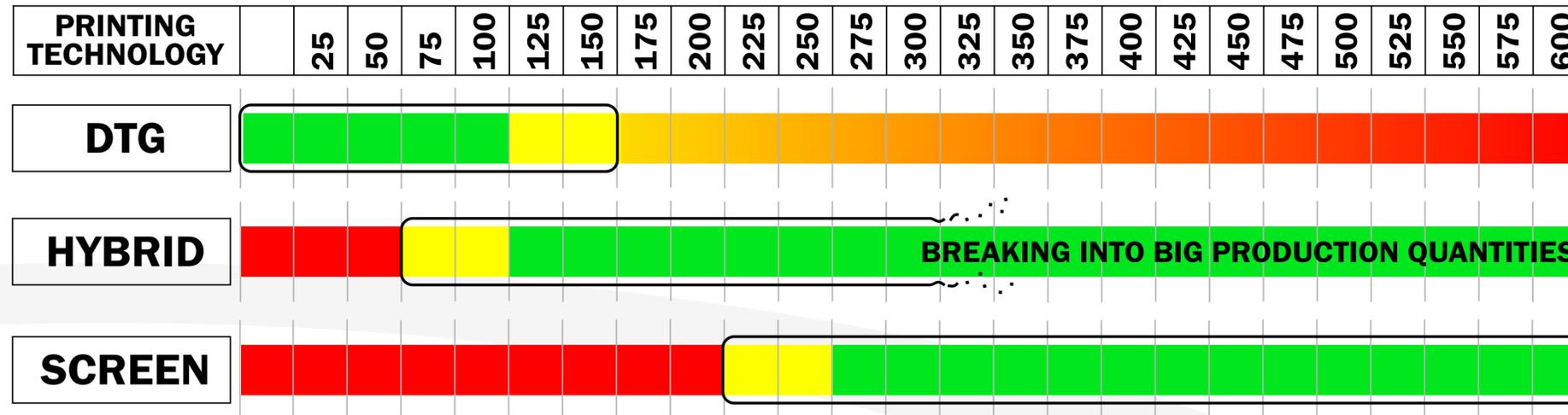
Note: The information provided in this document was not developed to be shared verbatim with customers and prospects, but rather to serve as a basis to develop your own personal narrative to present a compelling case for why the Digital Squeegee is the optimum garment decorating solution.

Digital Squeegee

Hybrid by the numbers



DTG / HYBRID / SCREEN - OPTIMIZED PRODUCTION QUANTITY



SETUP AND CONSUMABLE COST

Printer Type	Make Ready Expense (Per-Job)	Ink & Chemical Cost Per Garment	Garment Quantity	Total Set-Up & Consumable Cost
DTG	\$0.00	\$0.80	60	\$48.00
HYBRID	\$36.00	\$0.30	60	\$54.00
SCREEN	\$120.00	\$0.10	60	\$126.00

Note: Hybrid assumes (3) screens, and Screen-Print assumes (10) screens at \$12.00 each

Printer Type	Make Ready Expense (Per-Job)	Ink & Chemical Cost Per Garment	Garment Quantity	Total Set-Up & Consumable Cost
DTG	\$0.00	\$0.80	200	\$160.00
HYBRID	\$36.00	\$0.30	200	\$96.00
SCREEN	\$120.00	\$0.10	200	\$140.00

Note: Hybrid assumes (3) screens, and Screen-Print assumes (10) screens at \$12.00 each

Printer Type	Make Ready Expense (Per-Job)	Ink & Chemical Cost Per Garment	Garment Quantity	Total Set-Up & Consumable Cost
DTG	\$0.00	\$0.80	400	\$320.00
HYBRID	\$36.00	\$0.30	400	\$156.00
SCREEN	\$120.00	\$0.10	400	\$160.00

Note: Hybrid assumes (3) screens, and Screen-Print assumes (10) screens at \$12.00 each

TRADITIONAL SCREEN PRINT

Run Size	# of Screens	Cost per Screen	Ink Cost per run	Total
36	8	\$96.00	\$5.40	\$101.40
72	8	\$96.00	\$10.80	\$106.80
144	8	\$96.00	\$21.60	\$117.60
288	8	\$96.00	\$43.20	\$139.20

DIGITAL SQUEEGEE

Run Size	# of Screens	Cost per Screen	Ink Cost per run	Total
36	3	\$36.00	\$10.80	\$46.80
72	3	\$36.00	\$21.60	\$57.60
144	3	\$36.00	\$43.20	\$79.20
288	3	\$36.00	\$86.40	\$122.40



DS-4000 FAQ's - GENERAL

- **Exactly what is the Digital Hybrid System?**

The Digital Squeegee is an add-on high speed digital printer that can be installed on new and existing M&R screen automatic printing presses to create a Hybrid Screen-print and Digital Direct to Garment printing solution capable of producing a almost limitless number of colors at a single print station.

- **What is the Hybrid Print Process?**

The Digital Squeegee Hybrid system utilizes one or more screens of a conventional HSA (High Solids Acrylic) screen printing ink as an under-base applied in a Print, Flash, Cool configuration. The under-base(s) are followed by a wet layer of a digitally receptive screen-printing ink that serves as a binder layer onto which the CMYK Digital inks are printed then flashed. The CYMK inks are then over printed with a screen-print clear to achieve maximum wash fastness and durability.



DS-4000 FAQ's - GENERAL

- **Which M&R presses can the Digital Squeegee be used with?**

The Digital Squeegee has been designed to operate on M&R's flat pallet indexing automatic presses, including the Gauntlet III, Challenger III, Stryker oval series presses. All new M&R automatic flat indexing presses are manufactured for integrated operation with the Digital Squeegee printer. Existing M&R presses where the Digital Squeegee is to be installed as a retrofit will first require verification of compatibility, and possible upgrades and calibrations to make them DS ready.

- **How many print stations does the Digital Squeegee take up on the press?**

Digital Squeegee installation on an M&R carousel or oval press requires the removal of three printheads.



DS-4000 FAQ's - GENERAL

- **What are the minimum recommended number of Print-stations, Print-heads and Flash Cure units required to operate the Digital Squeegee?**

M&R recommends a minimum press configuration of a 16 station / 11 color Gauntlet III or Challenger III carousel press, or a 16 station / 7 color Stryker oval press. In addition to the press M&R recommends the use of (3) Flash Cure units, and a HotHead Fabric Compression System. This configuration provides the capability to utilize the HotHead before or after flash curing, to print and flash two under-base screens, plus the digital receptive ink before the Digital Squeegee, followed by a third flash, and finally an over-print clear before unloading the garment onto the dryer.

- **Can the press still be used for regular screen-printing with the DS installed?**
Yes, nothing changes on the press other than the availability of three less print-stations.



DS-4000 FAQ's - GENERAL

- **Is it possible to relocate the Digital Squeegee to another position on the screen-printing press?**

The short answer is yes it is possible to change the position of the Digital Squeegee on the press, however re-installation will require the involvement of a M&R Technical Service Digital Specialist to achieve precise alignment of the Digital Squeegee to the Screen-print press.

- **Are there any special Screen Preparation Requirements for Hybrid Printing?**

The screens for printing the under-base and the digitally receptive clear inks have to be produced with an emulsion suitable for use with (HSA) High Solids Acrylic inks. Correct screen tension is required to achieve accurate registration between the screen-printed image, and the digital print from the Digital Squeegee.

**DS-4000 FAQ's - GENERAL**

- **How does the Digital Squeegee integrate with the screens imaged on my i-Image CTS printer?**

M&R's Hybrid process utilizes the Tri-Sync feature of the M&R i-Image CTS to produce screens that are accurately pre-registered to the print placement of the Digital Squeegee. Each Digital Squeegee system comes supplied with a Tri-Sync screen pallet, and specially designed "positive-location" press pallet arm. This system integration of the i-Image CTS, and Digital Squeegee promotes fast and accurate press set-up times. No other manufacturer has a complete system integration that even comes close.



DS-4000 FAQ's - SPECS

- **What are the Key Specifications for the Digital Squeegee?**
 - **Maximum Image Size 38 x 48 cm (15" x 19")**
 - **Print Production Speed: 400 Pieces Per Hour at Maximum image size**
 - **Print Head Tech: Ricoh Gan% Variable drop piezo inkjet 7, 14, 21**
 - **Print Head #: 16 for DS-4000 / 8 for DS-1500**
 - **Ink Type: 4 color CMYK M&R Water-base DS ink**
 - **Addressable Resolution: Full Grey Scale, Resolution 600 x 1200 dpi**

**DS-4000 FAQ's - GENERAL****● Can I match Panatone® and Licensed Team Color with the Digital Squeegee?**

The Digital Squeegee utilizes a 4-color CMYK ink set with Caldera Copy RIP software to produce a wide pallet of clean bright colors. With that said, the Digital Squeegee as with all digital inkjet printing devices have a finite color gamut, and not every color can be reproduced. Enhanced color management and target color matching is possible in Photoshop using programs such as Nazdar CATZper® Color Tolerancing Software. (www.nazdar.com/CATZper) Another option for enhanced color management is Caldera's upgraded Grand RIP software. In addition to providing enhanced color management capabilities, the Textile Pro RIP software can be used with a Spectrophotometer to create custom color libraries, and accurately report digital ink use per print.



DS-4000 FAQ's - GENERAL

- **What types of file formats are utilized with the Digital Squeegee?**

Most raster-based files are accepted by the RIP. These can include BMP, TIFF, JPEG, PNG, PDF, and PSD files. The RIP does not have the capacity to utilize ai, eps or other PostScript files. These files can be opened in Illustrator and exported as 300 lpi Photoshop files, which can then be utilized by the RIP.

- **What kind of preparation do the art files require for printing?**

Most files require little preparation at all, the RIP converts and prepares the files on the fly, with point and click simplicity. The screen print under base, and spot colors may require some manipulation.

- **How many printheads are used in the DS-4000?**

The DS-4000 uses 16 Ricoh GEN 5 heads arranged in a 16" scanning array 4 heads per color are at the core of the Digital Squeegees print speed.



DS-4000 FAQ's - INKS

- **What type of Screen-Print Inks are used?**

The Most common ink system used for Hybrid applications are High Solids Acrylic (HSA) water-base inks used for under-base and over-print applications. These HSA inks are paired with specially formulated digital receptive white or clear water-base inks that act as a binder for the CMYK Digital inks. Water-base discharge, bleed blocker/anti-migration, glitter, puff high-density and other specialty inks have been used successfully.

- **Can I use Plastisol Screen-Printing ink?**

M&R doesn't currently have a Plastisol ink solution qualified for Hybrid printing at this time. The challenge to overcome is that the oil-base chemistry used in plastisol screen inks are not as compatible with the water-base CMYK digital inks as the HSA water-base screen inks are.



DS-4000 FAQ's - INKS

- **What type of DTG Digital Inks are used?**

The Digital Squeegee utilizes M&R proprietary formulation water-base CMYK digital inks that have been developed to provide an enhanced color gamut, printhead stability, and maximum compatibility with the digitally receptive screen-printing ink.

- **What garment materials can be printed with the Digital Squeegee?**

Essentially anything that can be printed with High Solids Acrylics (HSA) screen inks can be printed on the Digital Squeegee. We have successful tests on cotton, polyester blends, and performance fabrics.

- **How does durability of a Hybrid Print compare to a Screen-Printed or DTG Imaged graphic?**

Properly cured Hybrid prints will exhibit similar durability to that achieved with comparable graphics produced with plastisol or HSA screen-printing inks, and often provide improved results or traditional DTG printed graphics.



DS-4000 FAQ's - GENERAL

- **What is the cost of the inks?**

Please refer to M&R Sales Central for current digital ink pricing. The screen print inks vary on specific type, and manufacturer, but average around \$15.00 per kg.

- **What is the cost of a print?**

Due to the immense amount of variables such as size, percentage of coverage, etc...print cost will vary considerably. The average for light garments is \$0.05 to \$0.10 per full size imprint. The average for Black garments including screen printed under-base ink is between \$0.20 and \$0.45 for the same full size print. Caldera's Grand RIP upgrade calculates digital ink use per print.

**DS-4000 FAQ's - GENERAL****● What are the Curing Requirements for Hybrid Printing?**

Effective cure of the water-base HSA screen-print, and CMYK digital inks used in the Hybrid-Process requires temperatures a 300°F to 320°F, for between 1-1/2 to 3 minutes. Please consult the specific screen-printing ink manufacturers technical product data sheet to confirm recommended ink curing requirements.

● Do I need to utilize a dedicated dryer for Hybrid Printing?

Effective curing of the screen-printed and digital inks used in the Hybrid process requires longer dwell times than are needed to cure plastisol printed garments. The ability to load multiple presses onto a common dryer is more dependent on teh curing requirments of the ink chemistry being used.



DS-4000 FAQ's - GENERAL

- **How long does a print take?**

Just like print cost, print time will vary substantially. The average is between 4 and 6 seconds per print. Times are dependent on imprint size, and printer resolution settings. In general the DS-4000 should render an average press yield of around 400 prints per hour.

- **I have heard that clogging of the printheads is a common problem?**

The Digital Squeegee product line uses through the head ink re-circulation, and an automated head maintenance system, couple with a very specialized ink formulation to minimize this issue.

- **What is the expected life of the printhead?**

The DS-4000 utilizes industrial printheads that are rated for 100 billion actuations per-nozzle. In normal, full time, daily operation, if properly maintained the heads should last approximately one year.



DS-4000 FAQ's - ENVIRONMENT

● What Operating Environment conditions (temperature and humidity) are required for the DS-4000?

The Digital Squeegee is an industrial printer and was designed to operate in a production environment. In the event of extreme operating environmental conditions, the enclosed cabinet of the Digital Squeegee can be connected to a building, or portable air conditioning unit to achieve the localized environmental requirements for the Digital Squeegee that include;

- Ambient Temperature - between 64°F to 86°F (18°C to 30°C)**
- Humidity - greater than 40% ~ 70% (non-condensing)**
- Dust Free**
- Sheltered from strong sunlight**
- Proper ventilation is installed**
- No high intensity electrical / magnetic sources nearby**



DS-4000 FAQ's - GENERAL

● What is included in the purchase price for the Digital Squeegee?

The Digital Squeegee purchase price includes;

- DS-4000 Digital Squeegee Printer
- Network Ready PC complete with, Monitor, Keyboard, Mouse, (PCS) Printer Control Software installed
- Caldera Copy-RIP Software
- Digital Ink Cooling System
- DS Tri-Sync Screen Registration Pallet
- DS Tri-Sync Press Pallet arm
- DS Printer Positioning arm
- Consumable Start-Up kit complete with;
 - (1) Each 5KG of CMYK ink
 - (1) 10KG Cleaning / Print Head Cleaning Solution
 - Lint Free Print Head Wipes
 - Print Head Syringe Kit



DS-4000 FAQ's - GENERAL

- **What is “not” included in the purchase price for the Digital Squeegee?**
 - The cost of installation and operator training is additional to the Digital Squeegee purchase price
 - Crate, Freight, Taxes, On-site Rigging / Material Handling, Electrical, Pneumatic, & Network connection
 - (1) PC/Mac with Linux or Mac OS for use as a Pre-press RIP Workstation
Please see Pre-installation checklist for PC/RIP station requirements
 - Air Conditioning, Heating, or Humidity Control connections, and/or the cost of additional equipment to establish the required operating environment for the Digital Squeegee
 - Upgraded Caldera RIP Software and Densitometry Equipment for advanced Color Management processes



DS-4000 FAQ's - GENERAL

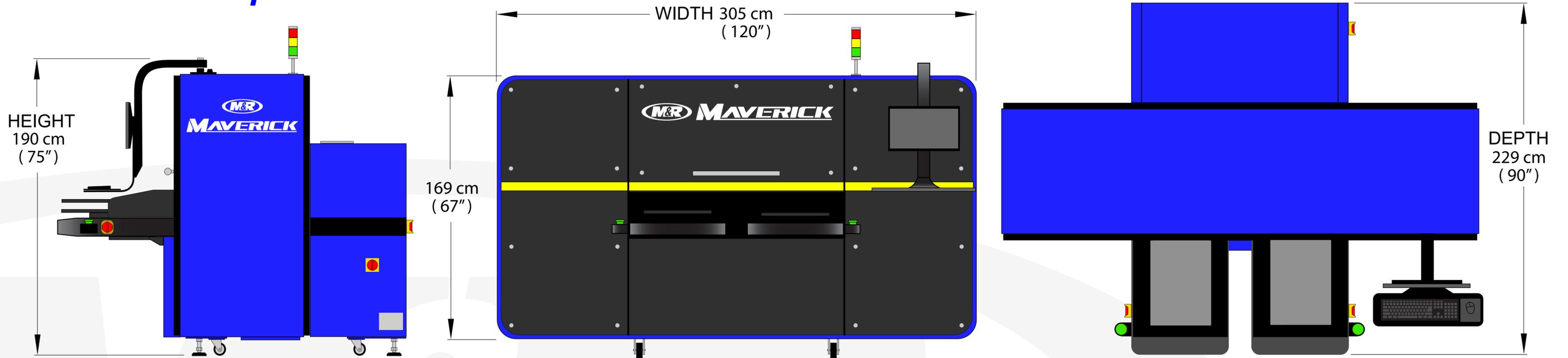
- **What is the warranty?**

The Digital Squeegee comes with a full one-year warranty, parts and labor. On-site labor is covered for only the first 90 days. Consumable parts such as filters, and printheads are not covered, see warranty card for full details.

- **Is there an available maintenance plan?**

Yes, M&R offers a pre-paid maintenance agreement that covers quarterly preventive maintenance visits, and replacement of pre-determined consumable parts, including a limited number of printheads as deemed necessary by an M&R digital technician. See an M&R representative for pricing and details.

Maverick Specs:



REQUIREMENTS:

Electrical: 208/230V, 3 ph, 33.5/36A, 50/60 Hz, 14.5kW

Electrical: 380/415V, 3 ph, 17/18.5A, 50/60 Hz, 13.5kW

Air @ 6 bar (87 psi): 85 L/min (3 cfm)

Specifications subject to change Please confirm latest specifications at mrprint.com

An uninterruptable power supply (UPS) should be used to protect electrical components

Machine Weight: 1400 Kg (3087 lb)

Machine Size: (H x W x D)
190 x 305 x 229 cm (75" x 120" x 90")

Shipping Weight: 1597 Kg (3520 lb)

Crate Size: (H x W x D)
208 x 325 x 229 cm (82" x 128" x 91")