

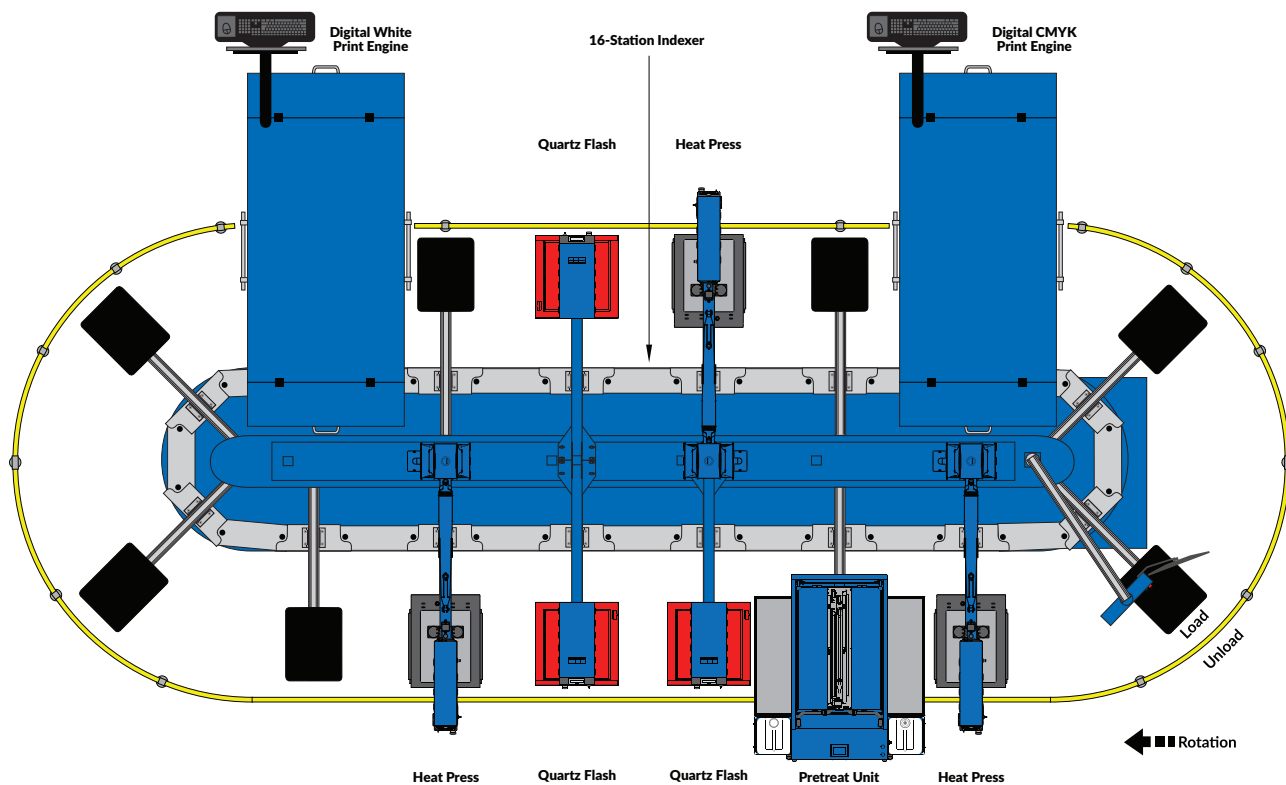
POLARIS™

Industrial High-Speed DTG Printing System



Where Image Quality and Productivity Meet

Where Image Quality and Productivity Meet



The Polaris™ Industrial High-Speed DTG Printing System sets a new standard with the latest generation of garment decoration technology from M&R. Designed to handle a sophisticated array of automation needs and quality requirements, the Polaris™ is set to accelerate growth and expand horizons.

Quality AND Speed? Polaris Does Both.

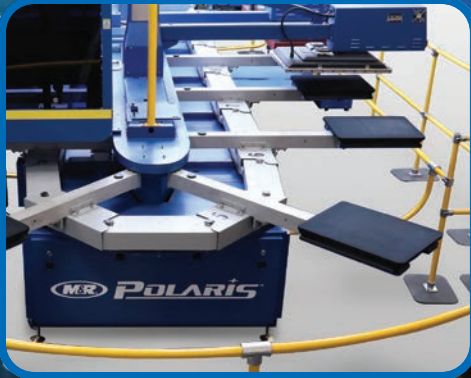
The Polaris utilizes more than twelve different hardware and software systems operating in synchronized harmony to achieve industry leading production speeds, with exceptional print quality. Key features of the Polaris include a 16-station indexer, precision-engineered to provide high-speed production and consistent, close-tolerance registration—print after print—for many years of industrial operation. The enhanced print quality of the Polaris comes from two industrial digital print engines—one White, one CMYK—with a 15"-wide printhead array for high-speed, single-axis printing.

Another key contributor to image quality is M&R's wet-on-dry print sequencing, where pretreatment is applied and dried prior to the application of the White ink, which is then flash-cured before printing the CMYK inks.

Other Features of the Polaris Include:

- Patented TucLoc® pallets for fast and efficient loading and unloading of garments
- Automated pretreatment application system is programmable for different colored and types of garments
- Onboard heat presses for fiber matte-down to create a smooth printing surface
- High-velocity air flow quartz flash cure units
- A barcode scanner that supports on-demand printing and can integrate with some existing workflow systems.

What Sets the Polaris Apart? **Every Part.**



16-Station Indexer

The indexing platform that the Polaris is built upon M&R's wildly-popular oval automatic printing press, known for dependability and longevity. Built of heavy-duty steel and premium components, the Polaris is built to last and here to stay.

Dual Digital Print Engines

The Polaris features two high-speed digital print engines with one dedicated to White and the second to CMYK. 16 Ricoh gen 5 industrial inkjet printheads arranged in a 15"-wide fixed array enable the Polaris to achieve industry-leading print production with high speed 4-, 6- or 8-pass, single axis printing.

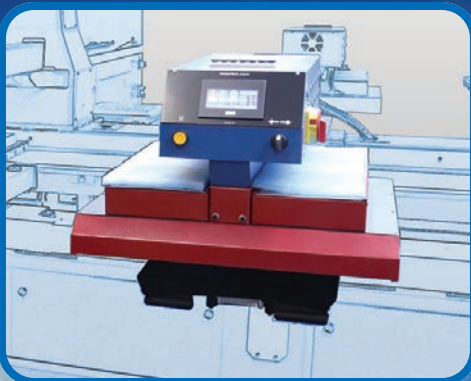


Onboard Pretreater

The onboard pretreater dispenses multiple formulations of pretreatment solution for light or dark-colored garments. The pretreatment is fully controllable to apply the correct amount of chemistry for optimum print quality on a wide range of fabric types.

Strategic Heat Presses

The Polaris utilizes multiple heat presses before and after the pretreatment process to create an ultra-smooth surface for the printing of white and CMYK inks. The heat presses are fully controllable through software to apply the correct level of temperature, pressure and time for the fabric type being printed.



High-Velocity Air Flow Quartz Flash Units

Evaporating the water out of pretreat and ink is a fundamental necessity, and our multiple quartz flashes are paramount to our rapid DTG process. Programmable time, temperature and quartz lamp intensity optimizes evaporative curing across multiple fabric types.

High Quality Prints at Screenprinting Speeds

The retail quality of color prints that the Polaris can produce is a sight to behold. Seeing the prints come off the Polaris in-person is stunning. Images jump off the substrate with depth and vibrance, with low setup costs compared to screen printing pricing. The attractiveness of printing on the Polaris is based on speed and diversity—it can produce individual color prints, on different underbases, on different garment types—one after another, all shift long.



Cotton Dragon

- Retail Quality
- Image size 13.5"x 17.0" (34.3cm x 43.2cm)
- 100% Cotton Tee Shirt
- Dark 5 Pass Profile = Custom 6 Pass White with 4 Pass Color
- 6 gm White
- .5 gm CMYK
- 8.5 gm Pretreatment (17 gm 50/50 mixed with 8.5 gm water)



Cotton Skull

- Retail Quality
- Image size 12"x 16.25" (30.5cm x 41.3cm)
- 100% Cotton Tee Shirt
- Dark 5 Pass Profile = Custom 6 Pass White with 4 Pass Color
- 8 gm White
- 1 gm CMYK
- 8.5 gm Pretreatment (17 gm 50/50 mixed with 8.5 gm water)



Fleece Cat

- Retail Quality
- Image size 12.5"x 16.75" (31.8cm x 41.9cm)
- 50% cotton 50% polyester heavyweight black fleece
- Dark 8 Pass Profile = 8 Pass White with 4 pass color
- 10 gm White
- 2.5 gm CMYK
- 36 gm Pretreatment



DTG-Compatible **Polaris Dryers**

One of the key features of the Polaris is its short drying time. Most garments can be dried in around three minutes! Because of this short drying time, specific requirements must be met with a compatible dryer. Garments printed on the Polaris require a dryer that provides between 16' – 20' feet of heat with a 60" minimum belt width. M&R recommends the following Polaris-compatible dryers for an optimized DTG production cycle:



Sprint® 3000

Gas Textile Conveyor Dryer

The Sprint 3000 is the most dependable gas dryer in the industry. Sprint 3000 dryers use high-performance burners. The burner system includes its own combustion air blower, and a high-volume forced air system quickly brings the dryer to the desired temperature.

Sprint 3000 dryers are available in a wide variety of configurations, belt widths, and chamber lengths. Sprint 3000 dryers have the highest production capacity in their class and are the most energy-efficient. The Sprint 3000 Series is simply the world's most sought-after line of dryers.

The Sprint 3000 D utilizes a stacked dual belt design, effectively doubling throughput while keeping a small footprint. It is designed to address new inks and printing methods such as direct-to-garment (DTG) and hybrid printing and their vastly differing cure rates, as well as traditional screen printing.

Sprint 3000 D dryers use a high-performance burner system that includes its own combustion air blower, and a high-volume forced air system that quickly brings the dryer to the desired temperature.



Sprint® 3000 D

Gas Textile Conveyor Dryer with Dual Stacked Belts

RIP and Workflow

A RIP That Helps You Raster Faster

The Polaris is driven by a series of specially-developed software modules that work together to deliver a high-quality print experience. Operators will first notice the **Press View** module, which boasts a unique real-time animation of the press. This animation tracks jobs from station to station so operators can see the status of a specific job and pallet combination. The module also houses an hourly throughput meter, which updates after each print to show the current pace of the machine. Since the interface is browser-based, Production Managers can have the ability to see the Press View from another computer on a local network.

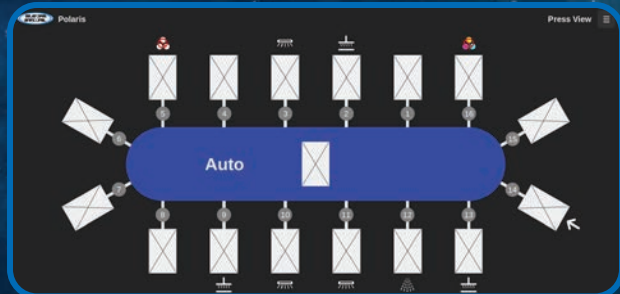
The **Submission Tool** module assigns jobs to the press and provides feedback as to how each job will be printed. In keeping the machine flexible, users have the option to manually browse and add print files, or they can take advantage of automation and utilize the integrated barcode scanner for true on-demand printing. When printing in either mode, users can see the recipe and mode being used for a specific print, the copy count and the assigned pallet numbers once the job has moved to the first station.

A Workflow That Flows with Your Work

For operations with workflow management software in place, the Polaris comes with an industrial barcode scanner that is integrated directly to the press at the load station, allowing operators to load and scan at the same time. Interfacing with the Polaris can be done via the Polaris API, and a barcode client is also included that can be used to pass the barcode to a web portal (if supported). For businesses that do not utilize workflow management software, the Polaris also supports manually adding jobs into a print queue.

Each of the digital print engines are controlled by the Printer Module, which connects them to the queue and synchronizes print files. Advanced maintenance functions such as automatic cleaning cycles, head height adjustment and a hibernation mode are accessible through this module.

The system was designed with flexibility in mind, from covering long runs of the same design (much like screen printing), to true, on-demand (one-off) printing. Jobs are processed through the Accura-Tee RIP (powered by Caldera) to support excellent color management and automatic generation of white and color print layers. Each machine comes pre-loaded with a set of garment recipes. These recipes are used to automatically control the settings at each station and can be changed from pallet to pallet in support of printing on different materials.



RIP Press View



RIP Submission Tool



Workflow Barcode Scanner



Working Environment Optimization

The Polaris is a robust, industrial DTG powerhouse, but even the fastest thoroughbred horses need adequate living quarters. To optimize the work atmosphere for the Polaris, specific environmental thresholds need to be met and maintained on a daily basis. Beyond the electrical and spatial needs to house a Polaris in your shop, temperature and humidity play a key role in maintaining high print quality. Here are M&R's recommended requirements for the Polaris.



AIR REQUIREMENTS

Indexing Platform: Air @ 6 Bar (100 psi), 9 CFM
Digital Print Stations (x2): Air @ 6 Bar (100 psi), 3 CFM
Pretreater: Air @ 6 Bar (100 psi), 0.6 CFM
Heat Presses (x3): Air @ 6 Bar (100 psi), 0.4 CFM



WATER REQUIREMENTS

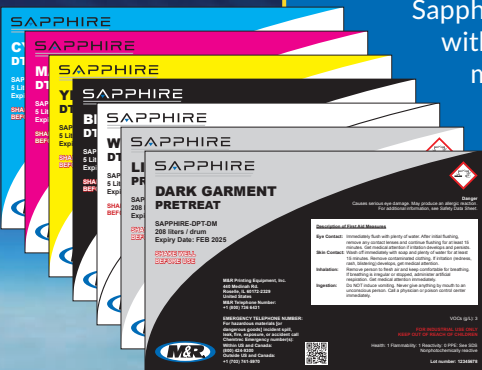
Water Line In: Filtered water (not distilled), 9.5 mm (3/8") tubing, 762 cm (25 ft.) max. length
Drain Line Out: 9.5 mm (3/8") tubing, 762 cm (25 ft.) max. length or dedicated drain pump



ENVIRONMENTAL REQUIREMENTS

Work Room Temperature: 20 - 25 °C (68 - 77 °F)
Work Room Humidity: 50% - 70% (non-condensing)

Sapphire™ Inks Provide Dazzling Color



Sapphire™ inks are proprietary waterbase inks specifically designed to function with the high speed of the Polaris. M&R formulated the inks to produce the most vibrant color matches with a wide CMYK color gamut. They have extreme durability, soft hand feel, abrasion resistance and wash-fastness for extended print life. They are available in Cyan, Magenta, Yellow, Black and White. They are sold in 5-liter containers that are poured into bulk holding tanks in each digital printer. Sapphire pretreat is available in Light for white/light-colored shirts, Dark for darker garments and are sold in 20-, 60- and 208-liter containers.

The Sapphire line complies with garment decorating industry standards that include OEKO Tex, EcoPassport, CPSIA and NIKE RSL.



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SPECIFICATIONS

ELECTRICAL REQUIREMENTS^{1 2}

Main Requirements - Max. Load	220 V, 3 ph, 230 A, 50/60 Hz, 90 kW (if alternating 1 ph for stamper)
Indexing Platform	220 V, 3 ph, 24 A, 50/60 Hz, 9.6 kW (16 stations, supplied from above)
Digital Print Stations (x2)	220 V, 1 ph, 10 A, 50/60 Hz, 2.2 kW
Pretreater	220 V, 1 ph, 4 A, 50/60 Hz, 250 W
Inline Flashes (x3)	220 V, 3 ph, 43 A, 50/60 Hz, 16.5 kW
RED CHILI DX™ Flash	220 V, 3 ph, 30 A, 50/60 Hz, 11.5 kW
Heat Presses (x3)	220 V, 1 ph, 17 A, 50/60 Hz, 3.3 kW
Control Stand	220/120 VAC, 1 ph, 14/22 A, 50/60 Hz, 3 kW (Separate from max. load)

AIR REQUIREMENTS

Indexing Platform	Air @ 6 Bar (100 psi), 9 CFM
Digital Print Stations (x2)	Air @ 6 Bar (100 psi), 3 CFM
Pretreater	Air @ 6 Bar (100 psi), 0.6 CFM
Heat Presses (x3)	Air @ 6 Bar (100 psi), 0.4 CFM

WATER REQUIREMENTS

Water Line In	Filtered water (not distilled): 9.5 mm (3/8") tubing, 762 cm (25 ft.) max.
Drain Line Out	9.5 mm (3/8") tubing, 762 cm (25 ft.) max. or dedicated drain pump

ENVIRONMENTAL REQUIREMENTS

Work Room Temperature	20 - 25 °C (68 - 77 °F)
Work Room Humidity	50% - 70% (non-condensing)

GENERAL SPECIFICATIONS

Digital Print Stations - Inks	One Station dedicated to White / One Station dedicated to Cyan, Magenta, Yellow and Black
Printing Resolutions	600 dpi native printhead resolution Maximum resolutions: 600x1200, 600x1800
Maximum Image Area	38 x 48.25 cm (15" x 19")
Standard Pallet Size	38 x 48.25 cm (15" x 19")
Overall Size (H x W x D)	238 x 874 x 534 cm (94" x 364" x 210")
Shipping Weight	7102 kg (15658 lb)

¹ If incoming voltage differs from the voltage(s) listed in this brochure, calculate amperage accordingly. Other electrical configurations (such as 380-415 V) are available: Contact M&R Printing Equipment, Inc. for details.
² An uninterruptible power supply (UPS) should be used to protect electrical components.

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