



**Newsway**  
**Press Register**

## **Registration Correction for Printing Press**

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### **Product Description**

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## Background

Mis-registration on a web press is mainly a result of mechanical wear and tear, paper stretch and press calibration. By in large, the amount of registration error observed depends mainly on the paper type and many other issues related to the press. The paper stretch, known as “Fan Out” or “Web Growth”, is a common issue on any web press and in some cases appears on a sheet-fed press too. Several factors cause the paper expansion; type of paper, the amount of water/ink applied, speed of printing, cylinder tension, ambient temperature and the others are press related issues.

The factors influencing the mis-registration that are caused by the press are difficult to characterize. On some web presses the parallelism of the main cylinder with the paper contributes significantly to mis-registration of the image printed.

The most common solutions to the mis-registration problem on a web are tedious and lengthy calibrations and the Bustle wheel (or air pressure from nozzles). Most solutions affect the image registration on the paper in a way that minimizes the mis-registration. However, those solutions are very time consuming, not accurate and not stable during the print run.

## Product Description

The NewsWay Press Register corrects all mis-registration on the printing press without the need to touch or modified the press. This is done by reading the registration deviations on the printed media (for each color) and applying the corrections to the digital files which are to be exposed on the plate. By this, the registration correction process practically covers all possible errors starting from plate cut, exposing device (CtF or CtP), punch, bender, plate gripping system and any other mechanical alignment on the press.

The registration correction process is a two step operation:

1. Measuring the registration error using a digital microscope
2. Modifying the digital file before exposing it on the film or plate

The main benefits from the use of the Press Register are:

- Faster make ready (register in less than 500 sheets)
- Can produce higher quality jobs
- Extends the press parts life span
- Reduces time (or eliminates) mechanical adjustment
- Adjusts multi-plate cylinder configuration (2, 4 or 8 plates)
- Corrects nonlinearity along the cylinder circumference
- Corrects registration of selected area within the plate

Designed to be a stand-alone unit, The Press Register can operate at any print site and can integrate into any workflow. It can smoothly integrate into the ProlImage NewsWay Production system to provide complete automation from PDF to plate.

The NewsWay Press Register scales, mirrors, rotates and shifts the 1 bit TIF image of each individual separation (C, M, Y or K) to the appropriate size, to compensate for the overall mis-registration of the press and exposing it on the plate with the corresponding size and angle required to be on the paper. This greatly improves the final print registration accuracy which might have been damaged by many factors influencing the web performance.

The main functions of the Press register are:

- Process 1 bit TIFF data after RIP on each color separation
- **Scaling** (resizing) the image on the plate (enlarged/reduce the width and height)
- **Mirror** for each individual separation image for direct print
- **Rotation** the image by any measure to compensate for cylinder cocking
- **Shift** the image left/right and up/down to align plate when web grip wears
- **Align** the separation image to center, left/right and up/down
- Preserve punch and bender registration marks (horizontal and vertical)
- Supports up to eight individual separations

## Simple operation and set-up

In order to achieve perfect print registration the Press Register uses two steps procedure to perform its operation. The first step is to measure the registration error on the printed matter using digital microscope having enlargement of x10 and x150 which can measure distances down to 10 microns.

With the help of the associated software all distances are digitally measured and display on the monitor.



The measurement of the registration errors is taken for all color separations, relative to a chosen one, and entered into the Press Register setup wizard, shown below:

Press Register Configuration

Channel: Input1

Expose Direction: Horizontal

	Width	Height
Image Size	0	0
Top Strip		
Bottom Strip		0
Left Strip	0	
Right Strip	0	

Separation	Scale W	Scale H	Angular Deviation	Shift W	Shift H	Mirror
Cyan	0	0	0	0	0	<input type="checkbox"/>
Magenta	0	0	0	0	0	<input type="checkbox"/>
Yellow	0	0	0	0	0	<input type="checkbox"/>
Black	0	0	0	0	0	<input type="checkbox"/>

Alignment: Center Center Rotation Pivot: Center Left

Insert Marks

Inch  
 mm

Apply

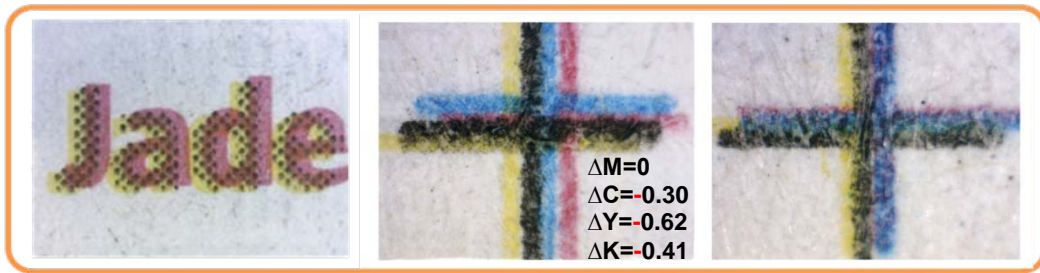
The Press Register performs the required corrections for each color separation and then sends the modified file (1 bit TIFF) to be exposed by the platesetter or imagesetter. Each channel of the Press Register represents one set of color separations and since there is no limit to the number of channels, any number of towers can be calibrated using one Press Register.

A special feature of the Press Register allows keeping strips (top and bottom) untouched, so when automatic punch and bender are used their registration marks are not modified and plates will be punched at the same position. The left and right strips allow specifying a certain area of the image to be registered while other areas are kept untouched. By doing so, a non linear registration error correction can be performed.

## Print Test Results

The print test was conducted on a Manograph Cityline, seven years old coldest web press. The right side registration mark was used as a pivot and the deviation measurements were taken on the left side marks, then the corrections were applied. The results shown below were observed throughout the print run with no changes during the entire print run (of approximately 150,000 copies).

**Original Print Results**

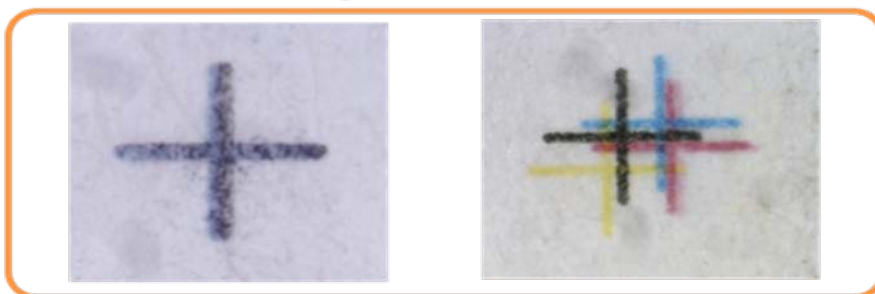


**FanOut Print Result**



Another test was conducted in which angle deviation was used to correct the registration. The results are shown below:

**Original Print Results**



**Press Register Print Result**



The procedure used for the above test is as follows:

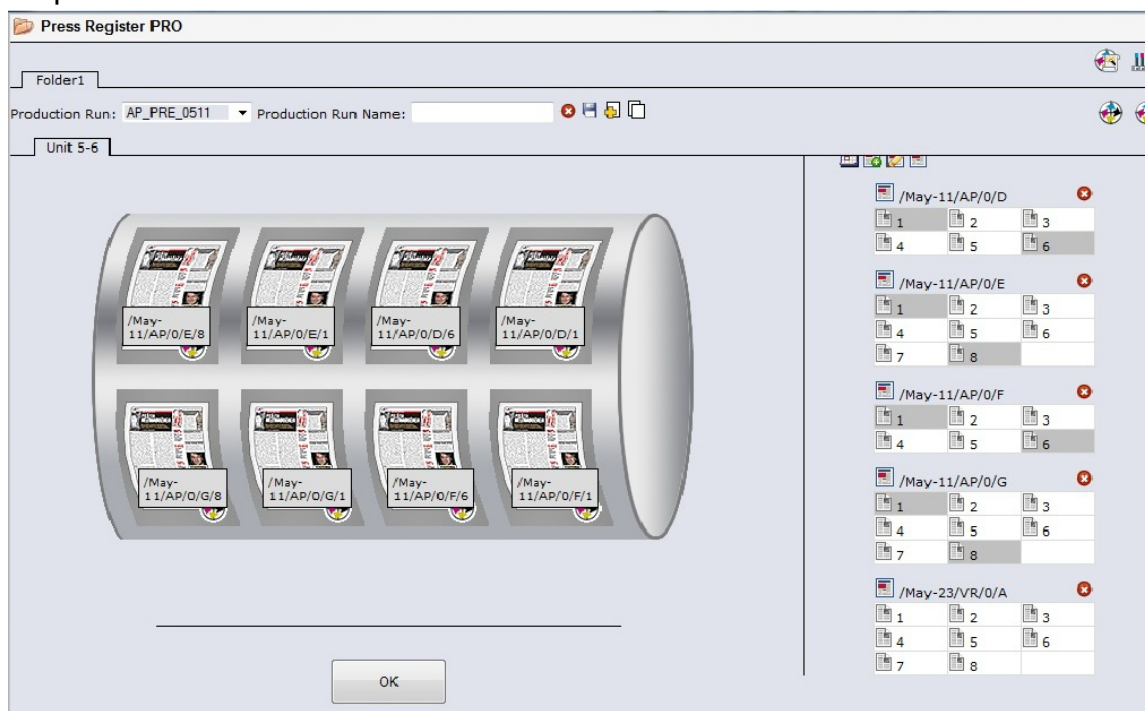
- All registration corrections on the web were removed (Bustle Wheels, Air Pressure and Auto registration)
- During printing the left registration mark was aligned perfectly
- The deviation error on the right side of the paper was measured with a digital microscope (accurate to 0.1 mm) using the Black separation as a reference.
- A new set of plates were produced via the NewsWay Press Register and mounted on the press
- Again, no registration correction were activated to produce the results shown above

## System Configuration Requirements

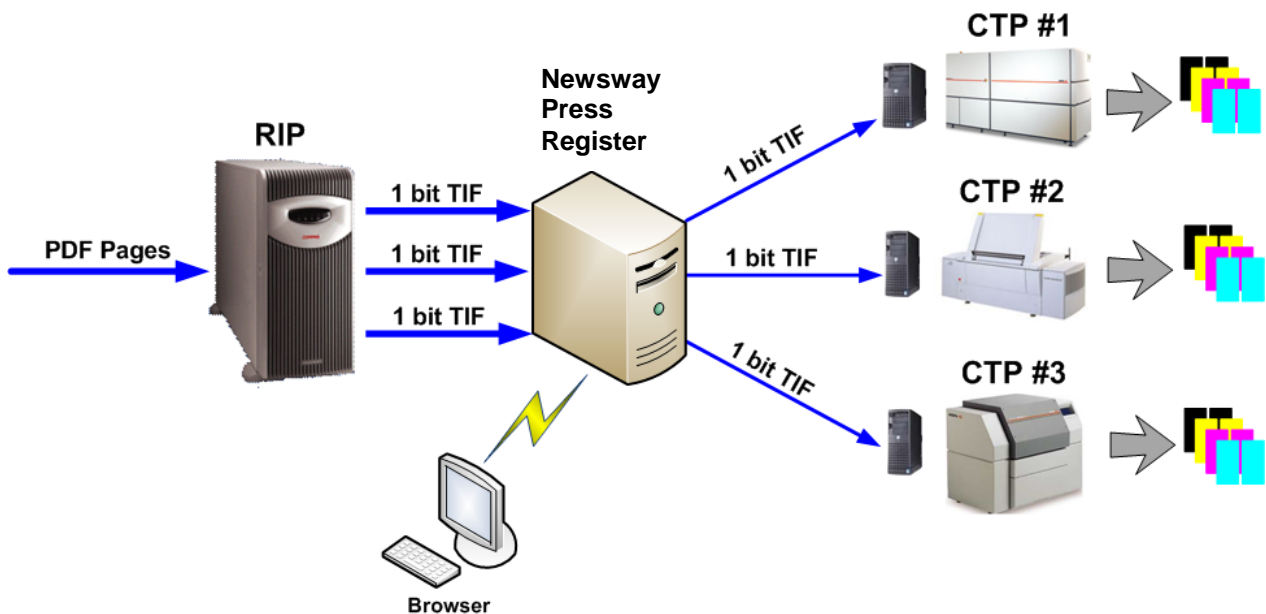
There are two basic system configurations for this product; The **Press Register** manual system and the **Press Register Pro** semi automatic system.

**Press Register** is a basic system using hot folders with manual drag-and-drop operation. The operator has to drop the relevant plate data to the appropriate channel file system in order to perform the needed correction and the output file is sent to the relevant channel output folder.

**Press Register Pro** is a semi automatic system having an edition layout wizard whereby the operator defines the position of each plate on the press (see screen shot below) and the data will then flow automatically to the appropriate channel and to the output folder that sends the data to the CTP device.



The basic system layout configuration is shown in the diagram below:



## Product Specifications

- **Hardware Configuration**

The recommended minimum hardware configuration for using the Press Register should be:

Newspaper Printers - Intel Pentium i5 or Xeon, Dual Processor, 3 GHz, 4GB DRAM, 300GB HDD (80GB for C and rest for D) and DVD player.

Commercial Printers - Intel Pentium i7, Quad Processor, 3 GHz, 4GB DRAM, 500GB HDD (80GB for C and rest for D) and DVD player.

- **Software Requirements**

Operating System – MS Windows 2003/2008 Server (**32 bits version only**), Service Pack 3 and with IIS installed.

- **System Performance**

Newspaper Printers - **20 seconds** per separation (using the recommended hardware above and 1 bit TIF format at 1200 dpi, 20MB/Sep (CCITT G4 compression))

Commercial Printers - **40 seconds** per separation for operation without rotation (using the recommended hardware above and 1 bit TIF format at 2400 dpi, 240MB/Sep (tiled compression))

**120 seconds** per separation with rotation (using the recommended hardware above and 1 bit TIF format at 2400 dpi, 240MB/Sep (tiled compression))

- **Workflow**  
Fully automatic, hot folder input/output system. The workflow uses input hot folder, programmable output result destination folder and error folder with log file.
- **Input/Output File Format**  
Input file format is a 1 bit TIF (LZW or CCITT G4 compressed) with up to 64K pixels per line width. The default output file format is CCITT G4 and it can be also set to G3, LZW, DFC30, DFC34, Scitex LW and NWC.
- **Controls**  
The Press Register can control the scaling of each individual color separation in the width and height relative to image center, left or right justification. It rotates each color separation and can shifts each color separation to left, right, up and down as needed. Any color separation can also be mirrored along the width access.
- **Product License**  
HASP dongle and password license activated.