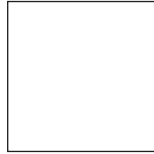




SECURITY FOILING LIMITED

SECURITY SOLUTIONS FOR THE WORLD WIDE MARKET



Introducing the Crystal 640 SF Cylinder Press

Introduction

The Press is based on the proven technology of the letterpress cylinder process. This offers all the advantages of the 'round on flat' stamping principle. It is an ideal machine for stamping and embossing, using the wide variety of paper/board and foils available. Being a highly versatile machine it is equally capable of producing the finest detail work as it is of producing large foiled areas. The Press is also designed for the application of holograms combining high quality production with minimal waste levels.

Being part of the Blockfoil Group, Europe's largest trade hot foil blockers, means that Security Foiling Limited presses have been refined by continual operator feedback to become what is now the most comprehensive range of foiling presses available.

The basis of the design is, reliability, ease of use, quality of blocking and ease of maintenance. Sophisticated, but simple to use, computer controls allow the Press to perform complex tasks without lengthy set up procedures. Advanced computer logic ensures that hologram registration is maintained even when operating at high speed. Precise control of the foil positioning ensures maximum utilization of expensive holographic foils.

Through many years of experience, in particular with the hot foil blocking of holograms, the Press has been uniquely designed for the application of holograms. Many features have been incorporated for ease and efficiency of operation. These include an adjustable height machine bed, fast change foil systems and computer controlled hologram registration.

During the entire build cycle there are four separate test phases to ensure the quality and reliability for which Security Foiling Limited has become renowned. Each individual process that goes into the construction of the machine is fully documented and checked. Customers are welcome to send representatives to our factory to monitor the machine build at all stages in its production. The Press is offered with a comprehensive installation and training package. Extended training can also be arranged at our UK facility.

General Description

The 640 SF (CRYSTAL) Security Press' is designed to apply Holographic Hot Stamping Foil and non-Holographic Hot Stamping Foil on to sheets of Bank Note paper and other Security Papers. The components, performance and control mechanisms are described in this document and any authorized addendum to it.

Base Unit

The base unit is a Heidelberg KSD press. The best available quality unit is purchased at the time of order confirmation, before a comprehensive renovation and conversion is completed. Heidelberg manufactured the KSD press until 1980 and the exact year of manufacture of the base press being converted is only known at the time it is purchased.

Press Conversion

The renovated Heidelberg KSD press is converted to a security press in stages as follows:

- Modifications to the renovated base unit
- Replacement bed assembly
- Foil control system
- Electrical system
- Control system
- Security press guarding system

The assembly of this unit uses newly manufactured components which are tested, reliable and of good quality.

Modifications to the renovated base unit

The renovated base unit undergoes several modifications to the existing castings to allow for the conversion of the base unit into a hologram and hot foil stamping security press. This operation does not require any additional components to be used.

Replacement bed assembly

The bed assembly replaces the existing bed and is a unique design, manufactured specifically for the Heidelberg KSD press conversion. The bed utilizes the latest in casting technology, creates a casting which performs exceptionally well under loaded running conditions and remains stable in both shape and size during operation. The bed benefits from having four individually heated honeycomb sections, which can be independently adjusted for height, enabling huge savings to be made on make ready times. Each heated honeycomb section has four temperature sensing points allowing for total control of heat distribution across the whole bed. The specially designed bed insulation system minimizes heat transfer from the heated sections to the bed casting, thus allowing the bed to be adjusted to closer tolerances.

Foil control system

The foil control system comprises a foil tray mounted on the end of the bed near to the cylinder which incorporates several dividing plates which position the foil in its correct position and also creates a line tension for the foil. 2 full width foil bars are located in the foil tray. These have location and tensioning collars fitted along the shaft for optimum foil control when applying registered holograms. The complete foil tray assembly is purpose built to suit the Heidelberg Press.

Foil movement is activated by the modular foil pull through the unit mounted on the opposite end of the bed to the foil tray. This foil pullthrough unit is built up of a combination of nip rollers, which will comprise upto 2 full width and upto 6 narrow width units. The 6 individual narrow width units are mounted on a dovetail bar and can be positioned at any point across the width of the bed.

The nip rollers are turned by means of precision stepper motors, which can achieve a pull resolution of 0.1 mm which is essential for accurate application of registered holograms. A foil counter can be set to monitor the foil usage and, when exhausted, will automatically stop the security press. Foil pull velocity is automatically minimized for optimum foil control. A trash shaft mounted directly above the nip rollers collects the waste foil. This trash shaft utilizes a disposable foil core, which makes trash collection and disposal fast and efficient.

Electrical system

The electrical system uses internationally renowned Allen Bradley components. These are of the highest quality, available worldwide and used as an industry standard for electrical system components. The electrical control hardware is located in an electrical cabinet that conforms to applicable CE standards and is located at the end of the machine. It contains the Programmable Logic Controller (PLC) which is the key component to the control of the security press. The PLC has a system of lights for its input and output signals which provides a clear display of the current status of the security press. This is used for straightforward faultfinding and maintenance.

The remainder of the hardware components consist of electrical switches and relays, plus the transformers and the drive control unit. All hardware components are clearly defined in the comprehensive technical manual, which accompanies the security press. The electrical system is designed to be easily controlled using menu-driven screen displays.

Control System

The principal part of the control system is the Computer Control Unit. It provides a clear on-screen menu driven display which allows settings to be programmed for the various operations of the security press. These include

- Control message display: gives the current status of the security press.
- Pre-set speed display: allows a pre-determined speed to be entered.
- Bed plate temperatures: pre-set and constantly displayed.
- Foil management parameters include (a) the setting of up to 5 different lengths of foil pull (b) the number of times each foil pull is required and (c) the foil start quantity.
- Hologram package set-up screen: to adjust the parameters for application of holograms.
- Engineering screen: to allow machine parameters to be adjusted.
- Sheet detection mechanism: to automatically prevent 'no-sheet' processing and 'double sheet' processing.
- Fully controlled, pre-programmable production stop cycle and security press running speeds: to ensure constant quality. In addition to the main control station there are two other control stations.

(i) The central control station: this controls

- Inching all foils
- Press speed increase
- Press speed decrease
- Press speed reset to pre-set speed

(ii) The paper feed station: this contains a counter that records the number of sheets delivered and an emergency stop button.

Guard System

The security press is fitted with guards throughout. This includes metal and Perspex guards, which protect the security press operator from any moving mechanical components and also any electrical components. The guards are part of a fully interactive system, which incorporates mechanical and electrical interlocks. These prevent the security press from operating if all contacts are not made. The security press will also stop running if any of the guards are disturbed in any way and a message will be displayed on the main control station to show the status of the security press, including which guard is open.

The guards play a major part in the safety of the security press, which is paramount to the safety of the operator. In addition to these features there are a selection of emergency stop buttons placed strategically throughout the security press. The comprehensive manuals supplied with the security press give clear safety messages, which must be noted when being trained in operation of the security press.

Paper Handling

1. There is a fully adjustable stream feeder head incorporating forward suckers, an air sheet separator and an air blast for lifting sheets during the forward cycle.
2. All are fully adjustable to deal with different paper types.
3. A pre-loader allows continuous paper feeding.
4. An automatic registration device ensures that the paper is positioned correctly.
5. The cylinder is ground to high tolerances to give a consistently high quality print finish.
6. Delivery grippers transfer the sheet to the delivery conveyor, and then to the open delivery pile, allowing full quality inspection whilst the press is running.

Foil Handling

1. The foil tray is made from 2mm passivated steel, with an easy release lid to full access and positioning of up to 14 foil rolls
2. The foil rolls are automatically kept under tension from the maximum roll to an empty core.
3. The honeycomb form bed is made from high-grade cast iron, machined and ground to high tolerances.
4. Heat transfer from the heater plate to the base is minimized, saving energy as well as minimizing risk of thermal distortion.
5. The foil rewinds are mounted at the end of the bed; each foil rewind has a microprocessor control to allow 5 different pull lengths with up to 99 repeats of each length per program.
6. A rotating bar rewinds the spent foil, which can then be easily removed for disposal.
7. The speed of the foil is automatically minimized offering excellent foil control and minimum foil wastage.

Performance Specification

Description of 640 SF (CRYSTAL) Security Press Performance

The 640 SF (CRYSTAL) Security Press' is designed to apply Holographic Hot Stamping Foil and non-Holographic Hot Stamping Foil on to sheets of tax stamps, security papers, bank notes and general products according to the configuration of the press as detailed in the Technical Specification.

Operating Speed

A maximum speed of 5000 sheets per hour would be possible subject to all other operating conditions and criteria being optimized. The speed is determined by

- (a) the characteristics of the paper being processed and.
- (b) the type of foil being applied.

Hologram Registration

The hologram registration system has a positional resolution of +/- 0.1 mm. When multiple impressions are made on one sheet, using one foil rewind unit, in a single pass, then only 1 of the holograms will be placed within the given tolerance. All other holograms will be dependent on the tolerance of the image position on the foil in relationship to the first image registered. Therefore the positional accuracy of the registered hologram images in the foil is critical and will affect the positional accuracy of features being applied by the 640 SF (CRYSTAL) Security Press.

Paper Characteristics

Size: Paper sizes from 125x150mm to 460x640mm can be processed.

Weight: Sheet thickness varying from 80 gsm to 180 gsm can be processed.

Security Threads

The 640 SF (CRYSTAL) Security Press when applying holograms can accommodate security Threads in bank note paper. However, holograms should not be placed over the security thread. Attempts to do so could adversely affect the performance of the 640 SF (CRYSTAL) Security Press and the quality of the hologram being applied.

Foil Characteristics

Size

Narrow Width Foil Pull-Through Units: Foil can be processed in rolls up to a maximum width of 100 mm. The maximum diameter is 90 mm.

Full Width Foil Pull-Through Units: Foil can be processed in rolls up to a maximum width of 640 mm. The maximum diameter is 90 mm.

Foil Type

Polyester-based foils can be used which vary between 12 and 20 microns thick.

Layout

The Layout of the holograms on the paper being processed must be within 20 mm of the edge of the paper. It must also comply with any other requirements in the Technical Specification.

Technical Specification

Paper Handling

Maximum Mechanical Speed 6000 impressions per hour

Maximum Sheet Size 460 x 640mm

Minimum Sheet Size 125 x 150mm

Maximum Stamping Area 440 x 620mm

Maximum Sheet Thickness 0.65mm

Minimum Grip Distance 10mm

Height of Feeder Pile 325mm

Height of Delivery Pile 450mm

Foil Handling

Maximum foil diameter 90 mm (approx. 1500ft @12 micron depending on foil type)

Foil core size 25.4mm

Minimum distance between foil rolls 2mm

Number of foil rewinds Up to 2 full width Upto 6 narrow width

Maximum foil roll width 800mm (full width units only) 100mm (Narrow width)

Number of Lengths per program 3

Number of pulls per length Up to 99

Pull Resolution 0.1mm

Hologram positional tolerance +/- 0.5mm

Hologram Registration Mark 5mm x 5mm Bi-directional centered on image (recommended)

Heating

Heat Zones 4

Temperature range 0-200 degrees centigrade

Temperature sensors 16

Adjustable Height Bed (Optional) +/- 0.3mm (0.6mm total)

Die height 6.35mm or 7.00mm versions available

General

Dimensions approximate 1870mm(H) 1790mm(W) x 3720mm(L)

Weight (kg) 4000 kg (approx.)

Air Supply 5 bar (75 psi) of clean air

Machine power supply 3 phase neutral and earth connections

380 / 415 / 440 V

50/60 Hz

63 amps per phase

22 kW ma

Duty Cycle Continuously rated