

SPS - Finishing

As the density of Optical Discs increases, the demands placed on accuracy and equipment performance also increases. Therefore, in order to achieve the correct results and meet the latest high-density specifications such as **Blu-ray**, each individual manufacturing stage needs to be controlled more tightly.

Sibert has always placed a high level of importance on the quality of stamper preparation processes prior to moulding and is responding to the new format requirements with its latest range of modular and upgradeable equipment, the **SPS - Stamper Preparation System**. This has been specifically designed to increase the levels of control and automation during stamper preparation. One part of this system is the **SPS – Finishing** module, which has been designed to include various improvements over previous machinery.

Key Features & Benefits:

- **Wet finishing System**
- **Programmable X-Y Finishing Head**
- **Automatic Abrasive Handling**
- **Automatic Stamper Cleaning & Drying**
- **Programmable Process Parameters**
- **Multi Stamper Handling**
- **Software Controlled System**

Optional Upgrades:

- **Additional Workstation**
- **Auto Disc Handling x 4**
- **Auto Disc Handling x 8**
- **Multi Stamper Handling**
- **Bar Code Reader**
- **Network Connection**
- **In-Line Transfer System**



Key Features & Benefits Explained

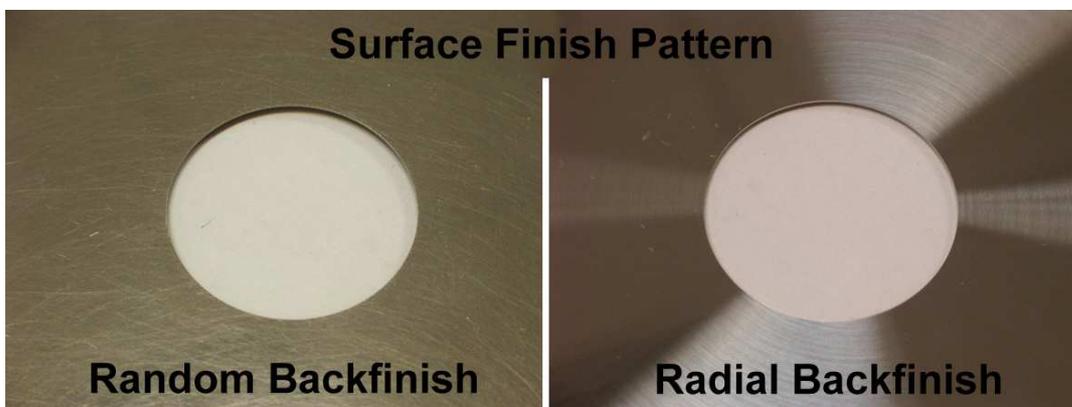
Wet Finishing System

The most critical aspect of **Rear Side Surface Finish** is consistency across the stamper surface. Historically, specifications were typically Ra0.10µm - Ra0.05µm, whereas for recordable and high-density formats, a better finish down to Ra0.03µm is required. Surface scratches are measured as Rt, which is typically specified as Rt1.0µm - Rt0.5µm, but should be a lower for high density formats.

To achieve an optimum **Rear Side Surface Finish**, a wet finishing process must be used. The consistency can be very precisely controlled by means of a fully programmable process. Using the process parameters and the seven available grades of abrasive disc, the optimum finish can be achieved. The **SPS – Finishing** module is supplied with a closed loop water system, but the option to install directly to the plant DI and wastewater is also available.

Programmable X-Y Finishing Head

With the optimum level of surface finish established, the **Surface Finish Pattern** must be considered. It is possible to create a random or radial pattern using the Sibert SPS-finisher, although the latter can affect the signal from the pit structure.



Different **Surface Finish Patterns** can be achieved by controlling the X-Y platform on the SPS-Finisher. For a random finish, an X and Y movement is used, whilst for specialist radial requirements, an X only, linear move is employed. Bespoke patterns for R&D can also be achieved by utilising the flexibility of the software. The flexibility of the equipment will also allow the abrasive disc to 'dwell' over selected areas of the stamper to provide the optimum surface finish parameters required.

Automatic Abrasive Handling

Three levels of upgrade are available on the **SPS – Finishing** module. The entry level allows for all the abrasive discs for one stamper to be loaded in the machine and processed automatically. For greater storage of abrasive discs and therefore less operator input, it is possible to install either a 4 cartridge or 8 cartridge system giving up to a total of approx 500 discs. To prevent handling of the used and contaminated discs, all options automatically dispense used abrasive discs into a waste container.

Automatic Stamper Cleaning & Drying

An important part of the process is to supply a clean and dry stamper after the finishing process. This is particularly important when a direct in-line transfer system is used. Any cross contamination should be avoided to prevent premature wear to the **SPS – Punching** module. The **SPS – Finishing** module has the option to automatically wash the stamper after the process, whilst a felt cleaning pad is employed to lightly clean the surface. Once this has been completed, a fast spin cycle is used to automatically dry the stamper.

Programmable Process Parameters

Stamper Flatness and **Stamper Thickness Variation** can be maintained by careful and precise set up of the finishing process. By controlled selection of Head Pressure, Cycle Time, Head & Turntable Speeds, Finish Pattern, Abrasive Discs etc, the correct results can be achieved. These settings can be easily adjusted via the technician screens on the **SPS – Finishing** module. The finishing diameter can be easily adjusted using the touch screen to suit different diameters of stampers and up to 99 different finishing programs can be stored at any one time.

Multi Stamper Handling

The SPS Finisher is now available with a Multi-Stamper Handling option. This latest upgrade has been specifically aimed at increasing automation for Stamper workflow, as well as reducing operator input and handling.

Multi-Stamper Handling allows up to 20 Stampers to be loaded onto a newly designed Input Station. Specially adapted Stamper Locators fitted with a Stamper separation device work in conjunction with further additions to facilitate gentle and reliable pick and place. Electronic sensing for Input Station empty is also included. An end of process alert is signalled via a siren and flashing beacon. New software providing increased intelligence during processing is also required for this upgrade.

The operator simply loads a desired batch of up to 20 Stampers onto the Front Input Station, closes the sliding Front Guard and presses the Start Process button. The machine will then work through all Stampers allowing the operator to undertake other tasks without having to return to the machine until the entire batch is completed. Multi Stamper Handling not only brings significant time savings to finishing Stampers, it allows more effective utilisation of your workforce.

Software Controlled System

The software within the **SPS – Finishing** module has been designed to provide the user with the ability to change or adjust various aspects of the machine in order to provide the correct set up for each stamper manufacturing requirement.

Some areas of programmable process control on the **SPS – Finishing** module include:

- Adjustable abrasive start and end points
- Adjustable finishing patterns
- Adjustable X-Y axis movement speed
- Automatic selection of up to 7 grades of abrasive discs
- Adjustable head pressure
- Adjustable turntable speed
- Adjustable head speed
- Adjustable cycle time
- Option for 1 or 2 water jet nozzles
- 5 different stamper type program memory

Finally, in today's cost and accuracy driven environment, the challenge to reduce the level of operator intervention is of utmost importance. To this end the **SPS – Stamper Preparation System** is able to demonstrate a significant reduction due to the level of automation available. The optimum set up is the fully automatic in-line transfer system from **SPS – Finishing** to SPS – **Punching** module.

From years of experience in stamper punching and finishing, Sibert now not only design, develop and manufacture the optimum range of equipment, but are able to provide customers with a solution to the ever increasing production demands.

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