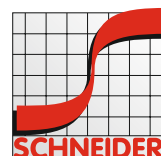
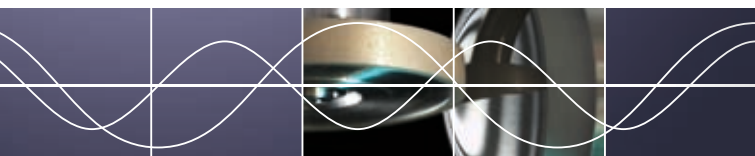


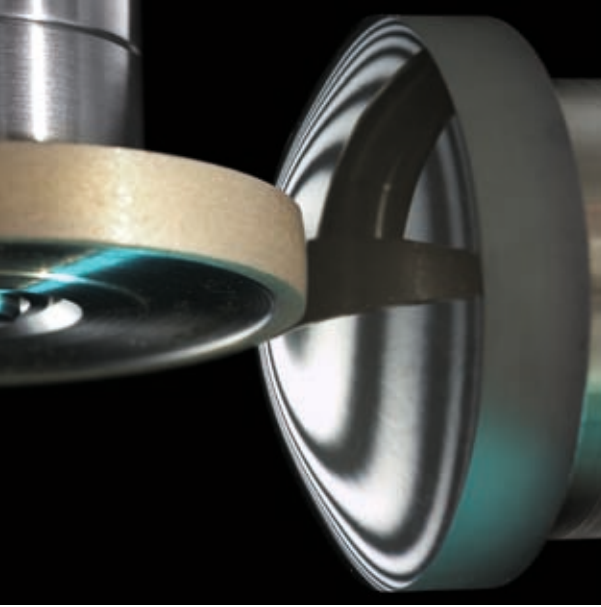


# Surfacing Center SCP 121

Superior polishing of spheres and aspheres



SCHNEIDER  
Fascination for Innovation



## Introducing the Surfacing Center SCP 121

Responding to ever changing customer needs in a timely and economical way demands flexibility and process integration. The Surfacing Center SCP 121 is the answer to these demands. Depending on the configuration, the center polishes all types of spheres, flats and complex aspherical lenses quickly, economically and with superior quality.

The SCP 121 offers an extensive package of options with different spindle arrangements and sophisticated in-process measurement technology enabling the optimal configuration for the customer's needs. The basic modules can be equipped from the beginning or upgraded to become a full fledged aspherical processing center.



### Solid foundation

The machine comes with a very stiff, monolithic polymer concrete base for kinematics of up to 7 axes and 4 spindles.

The modern SINUMERIK 840 Digital controller system directs the AC servo drives ensuring consistently high accuracy during the polishing and correction. The controller checks and adjusts all parameters like process times, working pressures, oscillation speed of the polishing process etc. Multi-step processing can be performed and parameters can individually be adjusted.

### One step ahead

The basic version S1/2 of the polisher comes with one polishing spindle opposite the workpiece and the correction spindles which are arranged in parallel. This arrangement enables the correction and the polishing step without any tool change. This configuration ensures maximum form accuracy, surface quality and process stability.

In the version S2/2, the SCP 121 is equipped with a second polishing spindle. This additional polishing spindle in connection with separate polish circulation enables 2-step polishing for a maximal form stability and highest surface quality – even with critical lenses.

Optionally available is the integrated automation of the polishing machine including a spray system for cleaning of the lenses.

### Easy setup and correction

The patented **Auto Teaching** module enables a fully automated setup process of the polishing tool and the workpiece. The contact situation of the tool and the work piece is determined with high accuracy. This includes the measuring of the polishing-tool length and the positioning of the lens. The procedure reduces the

setup time and ensures the correct settings under all conditions. The crash risk due to improper setup is reduced to a minimum.

The automated detection and alignment of the polishing-tool length guarantees the precise oscillation of the tool around the radius center – the most critical parameter for high form accuracy and process stability. The reliable and precise detection of the lens and tool position enables the reproducible polishing of lenses with very thin edges and other geometric specialties.

An accurate correction of the polishing tool is accomplished, using the integrated correction spindle – with no tool change necessary! The unproductive time is reduced to a minimum.

In production, the correction spindle allows a cyclic correction of the polishing pad.

Additionally, a graphically supported correction routine enables the operator to optimize the oscillation behavior to further minimize any form deviations.

The **Geo Control** is a CNC-controlled fine adjustment of the mutual positions of the workpiece and tool spindles to optimize the spherical quality and form error.

### Aspheric version SCP<sub>A</sub> 121

The SCP<sub>A</sub> 121 expands the capabilities of the spheric version SCP 121. The optional aspheric technology package of the SCP<sub>A</sub> 121 allows dedicated, deterministic polishing of aspheres – ready for magnetorheological finishing (mrf). The optimum polishing process for aspheres is calculated and executed on the basis of an automatically determined cutting profile of the tool. The actual values of the workpiece like geometry, material and surface roughness are taken with the aid of simulation technology.

The SCP<sub>A</sub> 121 optionally integrates two polishing spindles which can take both spherical and aspherical polishing tools

simultaneously. The integrated correction spindle enables the dressing both of the spherical and the zonal aspherical polishing tools.

### Data communication

The system interfaces to an Ethernet network connection and to the **SCHNEIDER Optical Technology (SOT)** software what enables a smooth and effective data exchange for setup and operation. Service is supported by an intelligent analysis system with remote diagnostic.

A graphical user interface assists the operator for an easy and fast completion of communication tasks with the SCP 121.

The seamless link with the surfacing center SCP 121 with external measuring equipment assures a smooth and flawless processes flow. The corrections are networked into the machine.



*The monolithic polymer concrete bed is basis for the kinematics with up to 7 axes and the workpiece spindle yoke.*



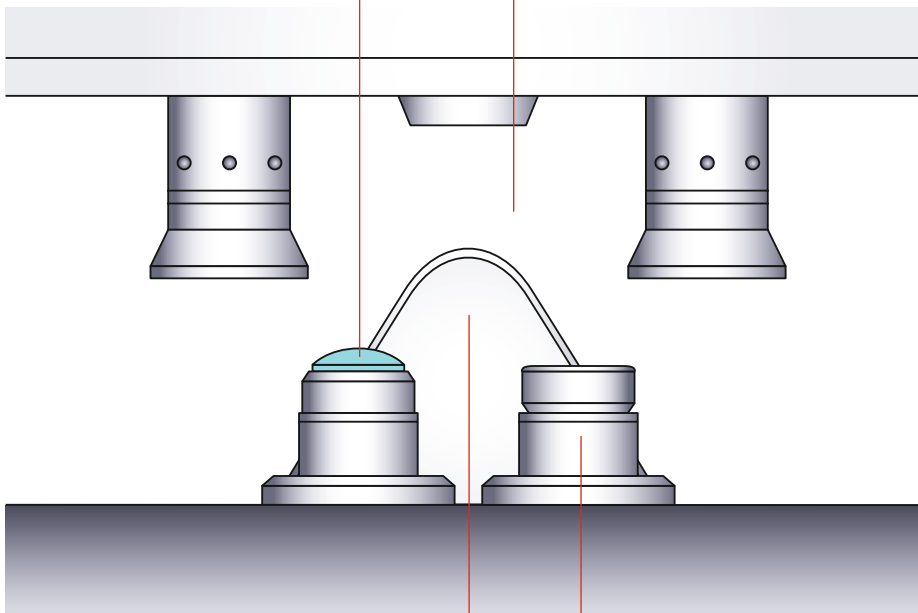
## Work space features of the SCP 121

### **Auto Teaching**

- Automated determination of the tool length and lens position
- Minimization of the crash risk
- Reduction of the setup time

### **Kinematics**

- The integration of the tool, workpiece and correction spindles guarantee precise and consistent results.



### **Geo Control**

- Optimization of sphericity and surface quality

### **Tool Correction**

- CNC-controlled correction of the polishing tools with integrated correction spindle
- No change of the correction tool

### Benefits

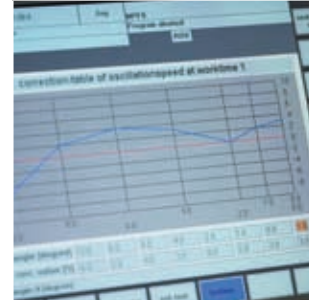
- Polishing of spheres and aspheres
- High quality and form accuracy
- Aspheric package for zonal polishing
- Multi-step processing with individual parameters
- Optional automation
- Flexible processing of small and mid-sized batches
- Tool correction without tool change
- Fast, precise and reliable setup by Auto Teaching
- Computer-assisted setup
- High process stability
- Graphical user interface
- Intelligent analysis system with remote diagnostics
- Modern network connection
- Automated central lubrication



*The SCP<sub>A</sub> 121, version S1/2, is capable of multistep polishing with individually controlled CNC parameters.*



*The S2/2 version allows for highest form accuracy, surface quality and process stability due to the use of 2 polishing spindles and 2 polishing agent cycles for rough- and high-quality polishing in one process cycle.*



*Optimum oscillation behavior is achieved by the use of graphic-supported form correction technique.*



*Deterministic aspheric polishing with the SCP 121 – zonal polishing with two tool spindles.*



*An integrated tool correction spindle system ensures fast and flawless adjustment of the polishing tool.*





technical data		
working range (max. diameter)	spherical aspherical with automation	tool ø 210 mm 200 mm 100 mm
working range	radius	10 mm – flat
number of axes		4+4 (X, Y, Z, B, Q1*, Q2*, Z2*, Y2*)
feed rate X-axis Y-axis Z-axis		0.01 – 30 000 mm/min 0.01 – 1 000 mm/min 0.01 – 7 500 mm/min
positioning and repeat accuracy X-, Y-, Z-axis		+/- 0.001 mm
feed rate B-axis		0.01 – 4 300 °/min
positioning and repeat accuracy B-axis		+/- 4"
tool spindle connection		25 x 42 HD
speed range toolpiece spindle HD toolpiece spindle HSK		50 – 2 500 min <sup>-1</sup> 50 – 2 500 min <sup>-1</sup>
workpiece spindle connection flange	ø	80 mm
speed range workpiece spindle		25 – 2 500 min <sup>-1</sup>
power requirement		10 kW
compressed air supply	min.	5 bar (75 psi)
vacuum	min.	0.6 bar (9 psi)
weight		4 300 kg (9 480 lb.)
dimensions (w x h x d) without screen		2 090 x 2 020 x 1 690 mm (82 x 80 x 67 inches)

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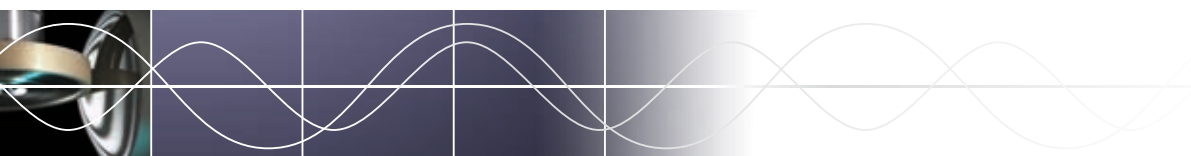
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