

# THE INDUSTRIAL GRADE DLP DENTAL 3D PRINTER



Faster Printing Speed

Higher Accuracy

Better Process Reliability

Truly Clear Appliances

Open Material System

## SolFlex 650 · 350 · 170

The Industrial Grade DLP Dental 3D Printer

# SolFlex

## VOCO SOLFLEX PRINTERS BRING INNOVATION TO THE DENTAL INDUSTRY

The SolFlex series of industrial grade 3D printers offer innovative features for easier, more efficient workflows and higher process reliability for the dental laboratory and dental office. SolFlex 3D Printers have proven themselves capable of handling 24/7 mass production in the hearing aid industry and are now ready to tackle the dental industry.

Complemented by large building volumes in a true desktop size and an easy-to-use touch screen interface, SolFlex 3D printers are innovative, robust machines that perform at the highest level.

Different from most other printer manufacturers, VOCO not only manufactures the printers, but also makes all of the 3D print materials in-house and can therefore guarantee the perfect compatibility of printer and material. The know-how of 37 years in the dental industry combined with our own research and development of leading resin technologies ensures superior print materials.

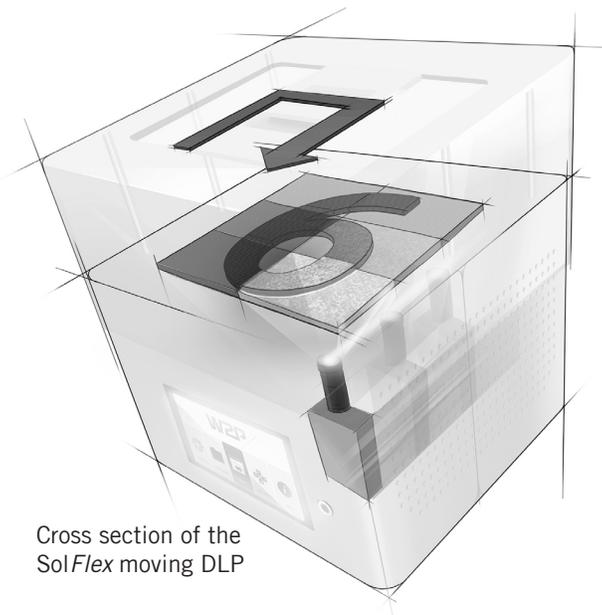
**Three key innovations make VOCO and its series of SolFlex 3D printers leaders in DLP printing technology.**

### INNOVATION 1

#### MOVING DLP (MOVING DIGITAL LIGHT PROCESSING)

Most 3D printers have one light source mounted in the middle of the printing platform. VOCO's SolFlex 350 and 650 printers have a high-tech Texas Instruments DLP light source that moves into different positions in order to keep the same distance between the light source and the build

object. Thanks to the moving DLP, also known as Pixel Stitch technology (PST), building quality/precision will remain high regardless of where the object is placed on the platform. This becomes very important for high-precision objects like crown and bridge models with dies.



Cross section of the SolFlex moving DLP



Six DLP moving-points

## INNOVATION 2

### FLEX-VAT TECHNOLOGY

With patented Flex-Vat technology, SolFlex 3D printers differentiate themselves from all other 3D printers in that the SolFlex tray is flexible and made from one piece of high-tech silicone. This innovative technology significantly reduces the peeling forces during manufacturing, enabling SolFlex printers to work much more quickly. Additionally, the number of required support structures are reduced, saving post-processing time and material.

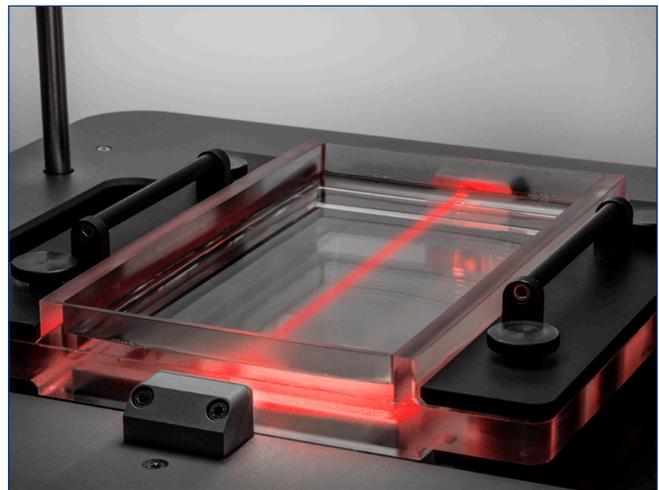


Flex-Vat tray

## INNOVATION 3

### SENSOR MONITORED PRODUCTION (SMP)

An optional feature available on each SolFlex model is what VOCO refers to as Sensor Monitored Production (SMP). SMP is performed by a sensor that measures the peeling forces emerging on the Flex-Vat surface. This information is used by the SolFlex printer to control and optimize the building speed, which in turn increases process efficiency and reliability, reducing time and material-consuming print failures. In fact, for most print jobs, the SMP technology reduces print time by up to 40 %.



SMP Speed Sensor

### POWERVAT<sup>2</sup>



The SolFlex 650 is designed for precise printing of large, massive objects in large quantities. To meet this requirement, the SolFlex 650 can be equipped, in addition to the Flex-Vat, with a rigid tray, referred to as the PowerVat.

- Precise printing of solid objects, e.g. models
- Processing of highly viscous materials
- The option to store materials in the PowerVat
- Cost effective and long lasting replaceable foil. (Foil lasts for approx 60,000-80,000 printed layers)

<sup>2</sup> when Powervat is used, SMP sensors will be deactivated

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## SUPERIOR QUALITY AND DESIGN

SolFlex 3D printers have been elegantly designed by experts and are hand-crafted in Austria and Germany using only high-quality industrial grade components. Complemented by large building volumes in a true desktop size and an easy-to-use touch screen interface, SolFlex 3D printers are innovative, robust machines that perform at the highest level. Benefiting from such high-quality design, SolFlex 3D printers perform at a noise level that is virtually unnoticeable.



### AVAILABLE IN 3 DIFFERENT SIZES

		SolFlex 650	SolFlex 350	SolFlex 170
The SolFlex 3D printers are available in three different sizes.  Depending on your needs, there will be a SolFlex printer for you.				
Max Capacity*	Models	6 / 12	3 / 6	2 / 4
	Surgical Guides	6 / 12	3 / 6	2 / 4
	Splints	12 / 24	6 / 12	3 / 6

\* Full arch splints, models and surgical guides. Printed on one or two levels with individual support.

# SolFlex

## FULL SERVICE AND INTUITIVE SOFTWARE



As a dental company, VOCO understands your business. VOCO's series of SolFlex 3D printers offer speed, precision, reliability and innovation. Different service packages are available that allow for 24-hour loaner exchange, as well as job continuation solutions with on-call professional dental lab technicians. VOCO's 3D printers will give you peace of mind and ensure that you can run your business as efficiently as possible and without interruption.



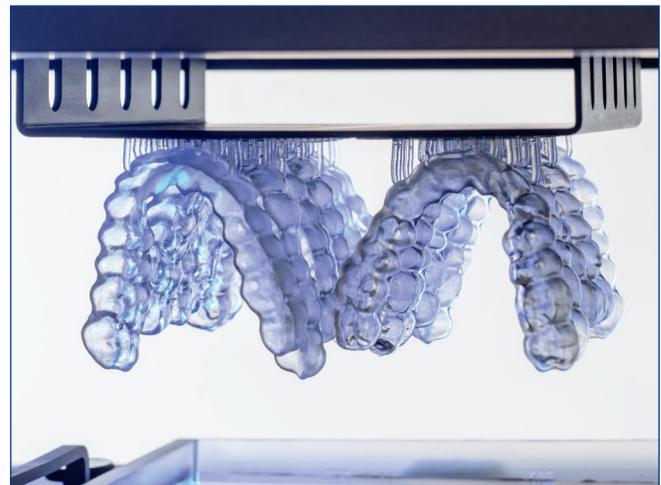
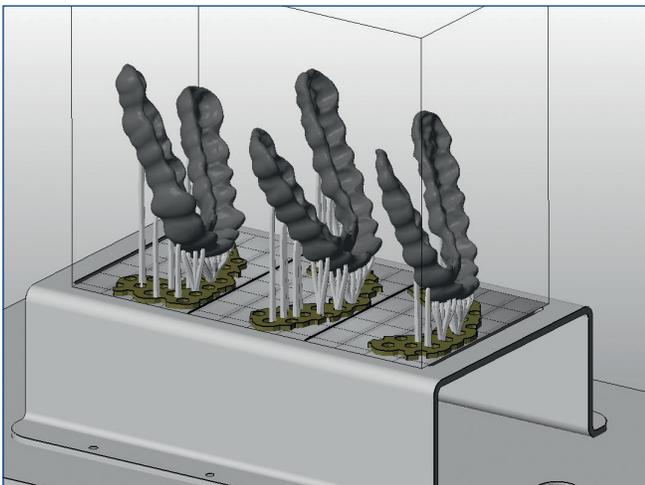
### SIMPLE AND INTUITIVE PYRAMIS SOFTWARE

SolFlex 170 includes the simple and intuitive 3D printer software, Pyramis. It is perfect for 3D printing beginners and experts alike. The comprehensive software includes very usable tools like:

- Automatic support generation
- Mesh analytic and mesh fix tool
- Automatic nesting tool (positioning)
- Z-compensation

### AUTODESK® NETFABB® SOFTWARE\*

For SolFlex 170, 350, 650, and for all materials, VOCO has partnered with Autodesk® to bring you the best 3D printing software solutions. Due to our OEM distribution agreement, VOCO's SolFlex Printers are included in the library and make print job creation very easy. Tools like automatic repair and hollowing of models are most appreciated by the advanced users. Each printer includes a 30-day trial and the standard version can be purchased for as little as \$225 a year.



## **SOLFLEX 385 NM DLP VS. 405 NM DLP AND SLA PRINT TRULY CLEAR SPLINTS**

The SolFlex 3D printers use the newest generation of Texas Instruments DLP Technology with a wavelength of 385 nm. A major advantage of DLP technology vs. the cheaper SLA technology is that it lasts longer. While the SLA technology “draws” the silhouette of the object for each layer, the DLP technology projects the silhouette all at once; which is significantly faster and more precise. In general, VOCO SolFlex DLP printers have a higher resolution than SLA printers.

With a wavelength of 385 nm, the SolFlex printers print in the invisible spectrum of light; which allows the production of truly clear ortho appliances without the yellow tint, unlike SLA printers or DLP printers with a wavelength of 405 nm.



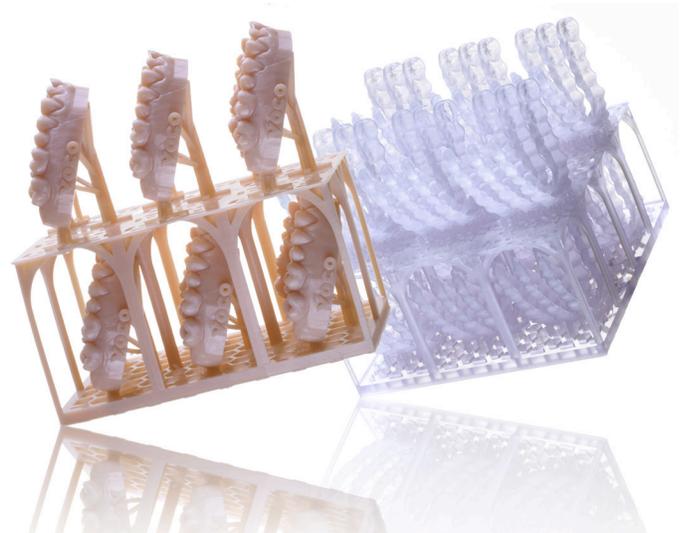
Truly Clear Splint with V-Print ortho

## **SolFlex**

### **OPEN PRINT STANDARD – BE PREPARED FOR THE FUTURE**

All SolFlex printers follow the open print concept. That means it is easy to use these materials and enter the parameters into the interface of the printer. With this feature, you are open to further print resin developments and new indications without any future limitations.

VOCO will continue to develop more materials and therefore expand printer usability. By making superior materials, VOCO feels safe in opening up the system to use with other materials, just to give you more options.





### V-PRINT MODEL BEIGE

Beige model 3D printing material for the additive production of precision components for all dental models.

The stone-colored beige allows for optimal visibility of the preparatory margins and prevents showing through when applying shades to restorations – especially in the case of cores. Printed models will have a very smooth and scratch-resistant surface. V-Print model is optimized for VOCO SolFlex 3D printers, but is also suitable for other DLP printers.

#### Indications

3D printed working and presentation models for the entire spectrum of models in dentistry

#### Advantages

- Opaque stone color for good optical recognition of surface structure, preparation limits, etc.
- High flexural strength and surface hardness
- Excellent precision
- Extremely smooth surface

REF 6042 V-Print model –  
bottle 1,000 g (beige)



### V-PRINT ORTHO

FDA-approved, truly clear and biocompatible 3D printing resin for the additive production of orthodontic base parts, X-ray templates for implantology, occlusal splints, study models and transfer keys.

V-Print ortho comes in a truly clear shade, offering esthetic advantages for orthodontic treatments. Appliances printed with V-Print ortho have an excellent accuracy and a high strength, making them comparable to lab-fabricated appliances. V-Print ortho is optimized for VOCO SolFlex 3D printers, but is also suitable for other DLP printers.

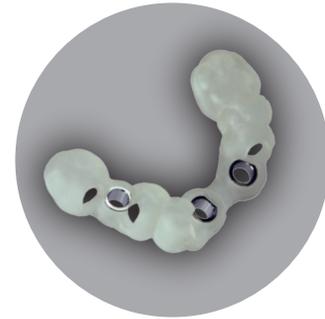
#### Indications

Orthodontic base parts, X-ray templates for implantology, occlusal splints, study models and transfer keys

#### Advantages

- Highly esthetic due to clear color
- High color stability and break resistance
- Biocompatible
- Neutral flavor and odor

REF 6040 V-Print ortho –  
bottle 1,000 g (clear)



### V-PRINT SG

FDA-approved, transparent, biocompatible, autoclavable surgical guide 3D printing resin for the additive production of precision drilling templates.

V-Print SG can be steam sterilized at 270°F for up to 5 minutes without any detrimental effect to the accuracy of the fit. The high-precision material ensures very accurate results. The material is biocompatible and flavorless and has a high flexural strength. V-Print SG is optimized for VOCO SolFlex 3D printers, but is also suitable for other DLP printers.

#### Indications

Dental drilling templates

#### Advantages

- Autoclavable at 270 °F
- Biocompatible
- High flexural strength
- Neutral flavor and odor

REF 6043 V-Print SG –  
bottle 1,000 g (clear)



# SolFlex

## THE INDUSTRIAL GRADE 3D DLP DENTAL PRINTERS

- Sensor Monitored Production**  
 Intelligent laser sensor monitors layer building and increases print speeds by up to 40 %
- Print Truly Clear Ortho Appliances and Extremely Precise Models**  
 Advanced 385 nm DLP prints crystal clear without yellowing like most 3D printers
- Patented Flex-Vat Technology**  
 Faster speeds and fewer support structures
- Moving DLP (Digital Light Processing)**  
 Higher accuracy across a larger build platform
- Outstanding Training and Support**  
 Printer operation and software training provided by a VOCO digital lab technician
- Open Material System**  
 Use V-Print materials or any other manufacturers' resin

	SolFlex 650	SolFlex 350	SolFlex 170
			
Dimensions	400 × 400 × 545 mm / 15.74 × 15.74 × 21.46 in	400 × 400 × 545 mm / 15.74 × 15.74 × 21.46 in	318 × 296 × 560 mm / 12.52 × 11.65 × 22.05 in
Build area:	128 × 120 / 5.04 × 4.72 in (6 exposure areas)	64 × 120 mm / 2.52 × 4.72 in (3 exposure areas)	56 × 89 mm / 2.20 × 3.50 in (1 exposure area)
Max. build height:	130 mm / 5.12 in	130 mm / 5.12 in	120 mm / 4.72 in
Layer thickness:	25–200 µm	25–200 µm	25–300 µm
Building capacity:	12 / 24*	6 / 12*	3 / 6*
Building speed:	up to 138 mm/h	up to 138 mm/h	up to 138 mm/h
Pixel size:	50 µm	50 µm	70 µm
Precision:	± 25 µm	± 25 µm	± 35 µm

### Presentation

#### SolFlex 170

- REF 9100 3D-printer
- REF 9101 SMP – 3D-printer (incl. sensor technology)
- REF 9110 Flex-Vat – Flexible material reservoir
- REF 9120 Platform – Building platform
- REF 9119 Platform – Interchangeable plate for building platform

#### SolFlex 350

- REF 9102 3D-printer
- REF 9103 SMP – 3D-printer (incl. sensor technology)
- REF 9111 Flex-Vat – Flexible material reservoir
- REF 9115 Handle bar 350/650 – Handle bar Flex-Vat
- REF 9121 Platform – Building platform

#### SolFlex 650

- REF 9104 3D-printer
- REF 9105 SMP – 3D-printer (incl. sensor technology)
- REF 9112<sup>1)</sup> Flex-Vat – Flexible material reservoir
- REF 9115 Handle bar 350/650 – Handle bar Flex-Vat
- REF 9122 Platform – Building platform
- REF 9113<sup>2)</sup> PowerVat 650 - material reservoir
- REF 9114 PowerVat 650 – foils

1) for REF 9105 2) for REF 9104

\* Full arch splints. Printed on one or two levels with individual support.

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