



PRINT HEADS FOR VISCOUS FLUIDS & PASTES IN ADDITIVE MANUFACTURING

We focus on the delivery of the print heads and their supply for industrial and professional AM applications of viscous fluids and pastes.





TECHNOLOGY USING THE ENDLESS PISTON PRINCIPLE

ADDED VALUE FOR THE CUSTOMER

Our tried and tested endless piston principle offers numerous advantages to the customer. Apart from the feasibility of non-component-dependent sizes, the precision of the technology is a high priority.

In addition, the endless piston principle is a technology for a wide range of product materials. Not to be disregarded is the fact that a wide range of material properties can be covered.

OUR TECHNOLOGY

Volumetric dispensing and filling systems are based on the ENDLESS PISTON PRINCIPLE and are used in low to high viscosity fluids.

At the heart of each application is a dosing pump which is purely volumetrically fed. The interaction between the rotor and the stator results in a feeding and dosing characteristic which is the same as an endlessly moving piston.

This results in a pressure-stable linear pump characteristic curve. It allows a clear statement about the ratio of revolution, time and dosed volume. Therefore, a constant volume can be dosed either via the time function or via the number of revolutions function, and give a dosing accuracy at the pump outlet of $\pm 1\%$ (depending on the material), which in practice falls below this.



PRODUCT OVERVIEW

1-COMPONENT PRINT HEAD – vipro-HEAD 3

The print head impresses with its unique precision and is suitable for nearly all 1-component fluids.

Theoretical volume flow: 0.03 to 3.3 ml/min
Weight: approx. 750 g



1-COMPONENT PRINT HEAD – vipro-HEAD 5

The print head creates new possibilities in a wide range of applications. A consistent and accurate print result – coupled with a high printing speed – is guaranteed.

Theoretical volume flow: 0.05 to 6.0 ml/min
Weight: approx. 750 g



2-COMPONENT PRINT HEAD – vipro-HEAD 3/3

The print head allows a wide range of applications for viscous 2-component fluids. The desired mixing ratio can be adjusted via the speed ratio of the drive units.

Theoretical volume flow: 0.03 to 3.3 ml/min per mixing head part
Weight: approx. 1200 g



2-COMPONENT PRINT HEAD – vipro-HEAD 5/5

The fluids and pastes are conveyed volumetrically and separately from each other into the static mixer.

Theoretical volume flow: 0.05 to 6.0 ml/min per mixing head part
Weight: approx. 1200 g



MATERIAL SUPPLY

Everything from one source – that is the guiding principle of ViscoTec. Therefore, the customer not only has the possibility to purchase print heads from ViscoTec; but also the appropriate emptying and degassing systems are the customer's choice. OEM products are available on request.



1-COMPONENT PRINT HEAD WITH HEATING FUNCTION

CARTRIDGE HEATER

- Capacity of 55 ml
- Fixation with a mounting plate on the print head

CARTRIDGE ADAPTER & BLEEDING SCREW

- Uncomplicated bleeding after each cartridge replacement
- Optimum heat distribution due to print head and product material

HEATING UNIT FOR PRINT HEAD

- Heating of viscous fluids and pastes
- Heatable up to 70 °C (158 °F)

ENDLESS PISTON PRINCIPLE

- Continuous dispensing
- High precision dispensing results also for heated materials

DISPENSING NEEDLES

- Optimum heat distribution due to metal needles
- A wide range of metal needles available



2-COMPONENT PRINT HEAD

MOTOR

- Control via 3D print signals
- Compact design with parallel arrangement of the individual motors

MATERIAL SUPPLY & BLEEDING SCREW

- Easy product handling
- Optional bleeding screw for uncomplicated bleeding

ENDLESS PISTON PRINCIPLE

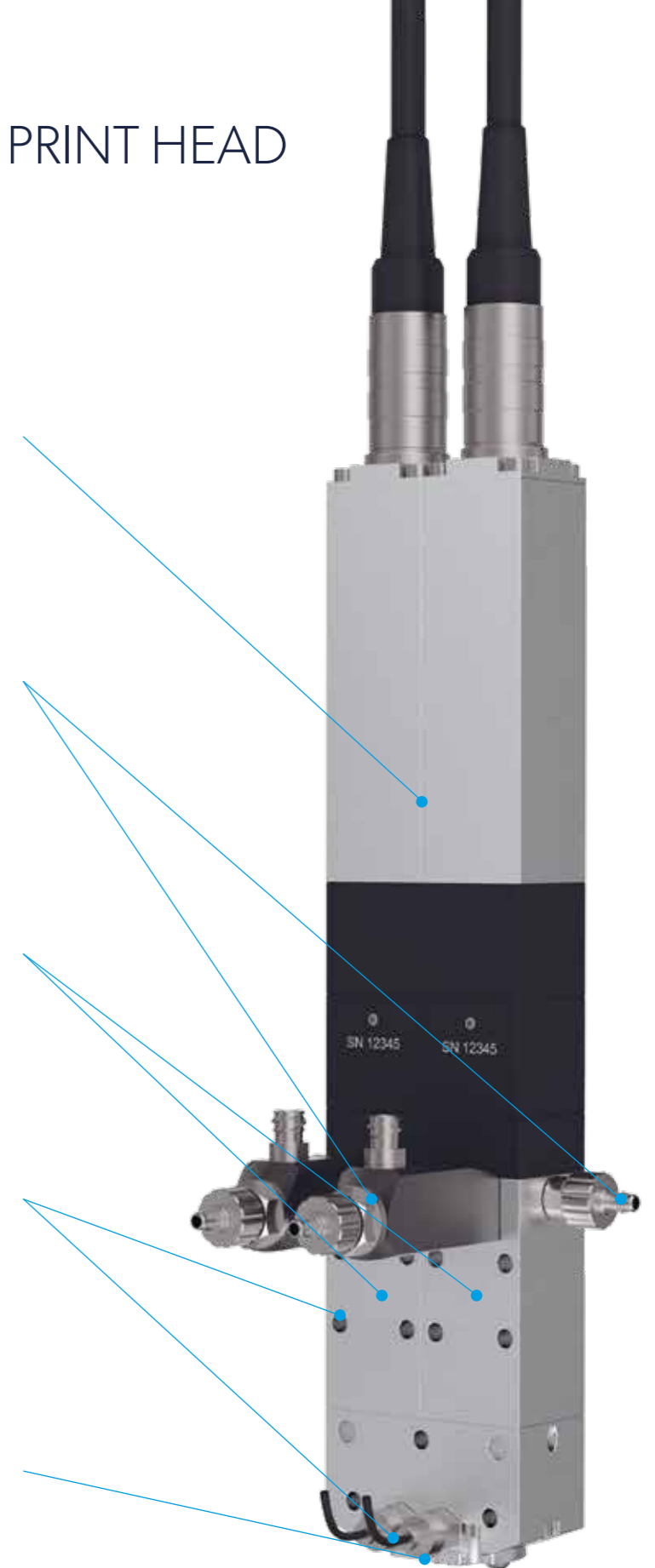
- Continuous dispensing
- For almost all viscous 2-component fluids and pastes

MONITORING & CONNECTION

- Optional monitoring via pressure sensor (material inlet and outlet)
- Different opportunities to connect print head with 3D printer

STATIC MIXER

- A wide range of different static mixers
- Optimum mixing of 2-component fluids and pastes





MATERIALS

1-COMPONENT MATERIALS

A selection of possible materials:

- UV adhesives
- Epoxy resins
- Acrylate
- Silicone
- Grease
- Inks
- Waxes
- Abrasive pastes
- Bio-technical suspensions
- Advanced, high-performance and technical ceramics
- ...

2-COMPONENT MATERIALS

A selection of possible materials:

- Silicone
- Epoxy resins
- Polyurethane
- Acrylate
- Polyester resins
- ...

The viscous fluids are cross-linked and give the component the properties that they need for production.

CURING METHODS



UV, humidity, heat and a combination of these.



AN EXAMPLE OF POSSIBLE APPLICATIONS



GENERAL INDUSTRY

Game-Changer: Use of individual solutions in rapidly changing ambient conditions

Example: Attachments for robot grippers



AUTOMOTIVE

Game-Changer: Mechanical material properties increase the component strength of relevant components

Example: Sealing lip



ELECTRONICS

Game-Changer: Creation of prototypes and small series of complex electronic components

Example: Ultrasonic transducers



AEROSPACE

Game-Changer: Targeted weight reduction of components reduces energy and resources

Example: Electromagnets



MEDICAL TECHNOLOGY

Game-Changer: Personalized medical products provide a targeted treatment process

Example: Ventilation units



RESEARCH & DEVELOPMENT

Game-Changer: A variety of viscous fluids and pastes providing a competitive edge

Example: Printing of textiles

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