

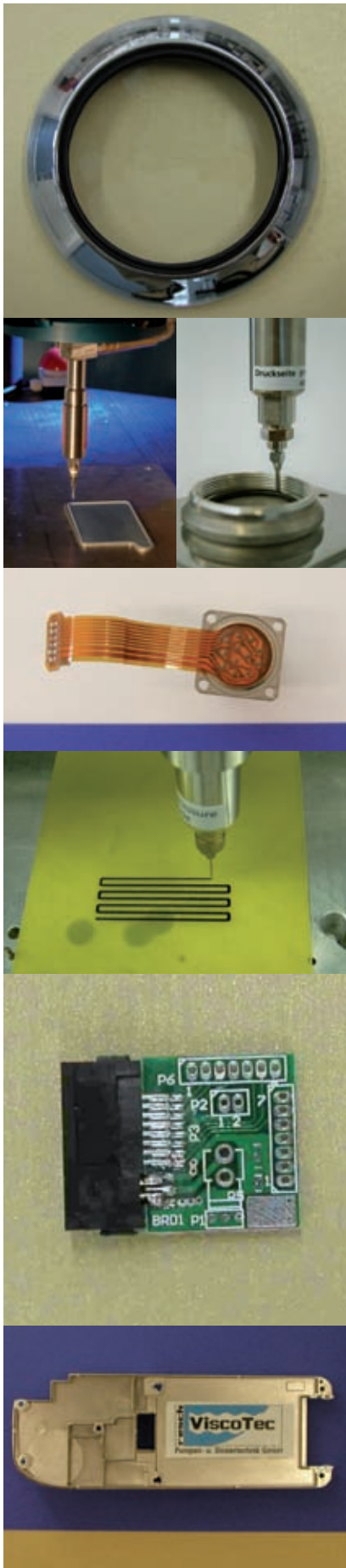
**adhesives &
sealants**



perfectly dosed

Product characteristics

Product examples



Product characteristics:

- low to high viscosity
- high-content
- abrasive
- shear-sensitive
- sticky
- aggressive

Product examples:

Adhesives and sealants:

- adhesives
- silicones
- 2-component adhesives
- potting and sealing compounds
- solder pastes
- RTV silicones
- anaerobic adhesives
- cyanoacrylates
- epoxy resins
- polyurethanes

Paints:

- UV-paints
- coatings/varnishes
- paste paints
- offset paints
- additives

Chemicals:

- suspensions
- viscous raw materials
- emulsions
- fats

The quality of your products is closest to our heart

Don't leave the quality of your products to chance, especially where series production is concerned. The major factors to consider here are maximum reliability, a high standard of quantity/shape accuracy and cost-effective operation. Just a slight variation in dosing quantity can lead to the destruction of many parts simply because of a temperature-related viscosity change!

ViscoTec provides effective, individual solutions: We set the standard for the automatic dosing and application of adhesives and sealants.

Some examples of our operating areas:

Electronic industry: encapsulating components, sealing beads on housings, plug manufacture, insulators, loudspeakers, glob top applications

Vehicle construction: body shop, power train, engine manufacture

Automotive supply industry: airbags, coolers, injection pipes, sunroofs

Tool manufacture: drills

Chemicals: batching systems

The perfect application system must tolerate changes in product flow behaviour or enable easy adaptation to network control systems. The solution for this is an exact volumetric dosing pump. This converts a rotary movement into a constant speed-proportional dosing flow. The control-dosing behaviour can be compared to that of an infinitely moving dosing piston – particularly interesting is its feature of reverse flow, which offers additional application advantages.

What you need to achieve the perfect application:

very high repetition accuracy of quantity

no dripping or threading at the nozzle

no product accumulation at joints

smooth bead forming, even during travel-speed changes

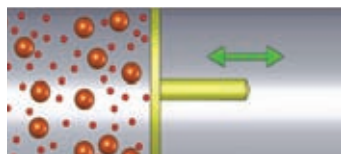
one model for small-quantity spot dosing as well as lines

ViscoTec dosing pumps are particularly cost-efficient when exact, pressure-stable volume flows have to be produced or exact volumes dosed, because in most cases the need for flowmeters can be eliminated. The only control parameter is the pump speed, so this allows the ViscoTec dosing pump to be regulated very easily.

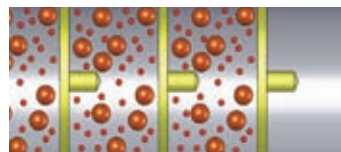
When compared with other displacement pumps of similar size and design, there is hardly any leakage (slip) with ViscoTec dosing pumps at higher counterpressures, so expensive control systems are seldom required.

Problems with gear pumps, piston fillers or barrel pumps with pistons? Make it a thing of the past! Check out the advantages of ViscoTec's ENDLESS PISTON PRINCIPLE:

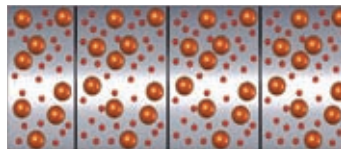
THE VISCOTEC ENDLESS-PISTON PRINCIPLE



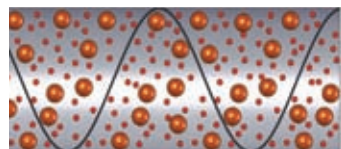
Just imagine a piston.



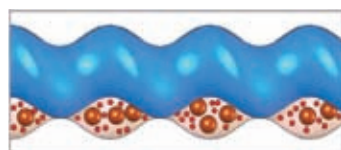
Or even better, several pistons behind each other.



Now we'll make the wall thickness of the piston zero...

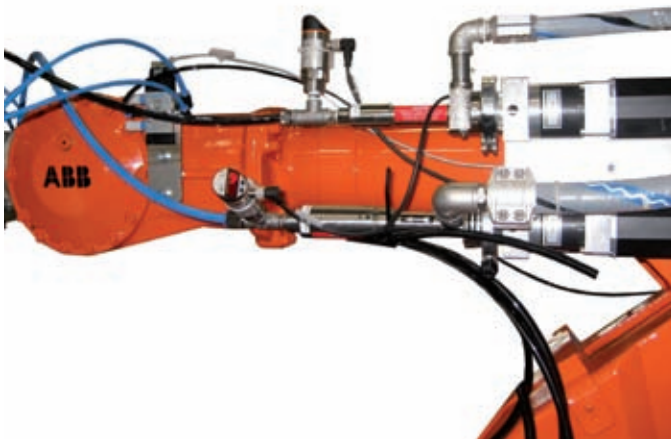
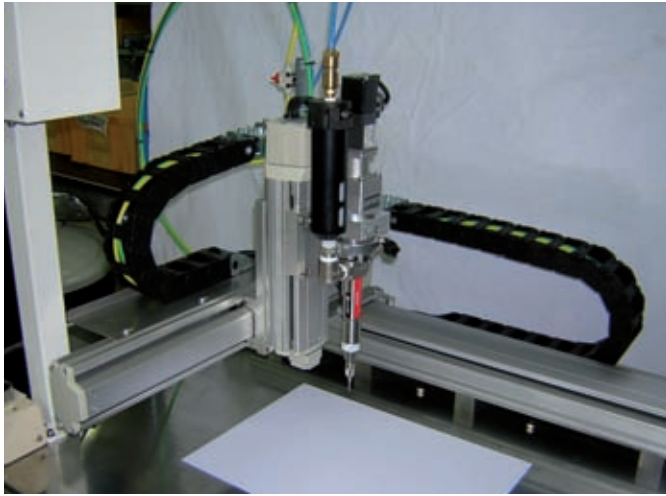


and change the piston shape slightly.



Already we've got the ViscoTec endless-piston principle!

Our solution – your advantages



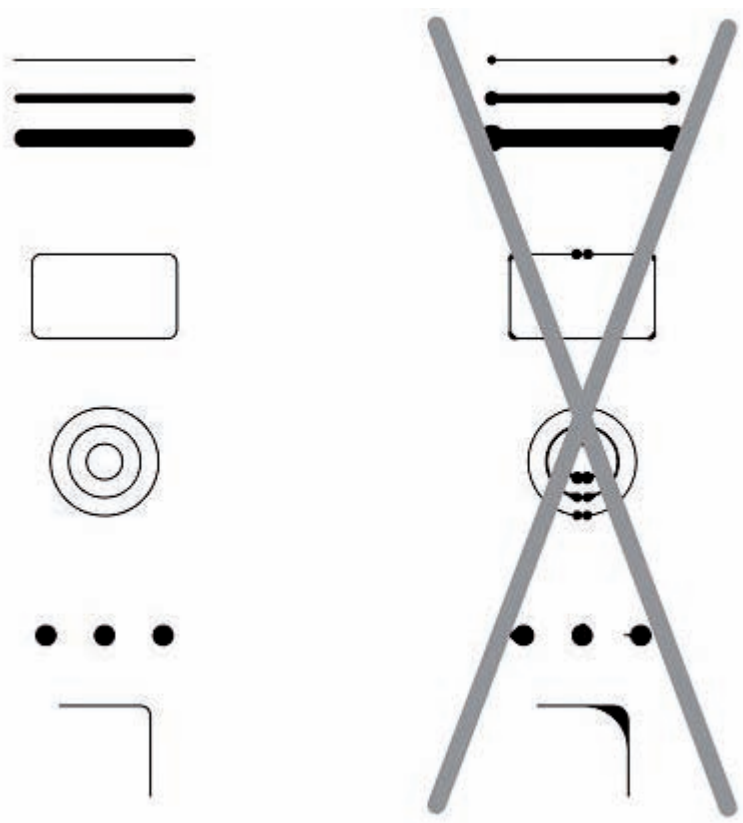
ViscoTec technology has been specially developed for semi or fully automatic application and dosing operations.

It therefore offers the following advantages:

- Easiest adjustment of quantity, e.g. when travel-speed changes take place.
- Application process is independent of temperature and viscosity (e.g. with batch or temperature-related viscosity changes)
- No problems with solids or shear-sensitive products (UV paints, adhesives with encapsulated components)
- Defined start/stop prevents product accumulation at the end or beginning of the line
- Pulsation-free application
- Accuracy level considerably higher than with time-pressure systems
- Controllable reverse-flow feature for products that tend to form threads
- No more problems with dosing valves
- Stability is unaffected by changing supply pressures
- Easy upgrade to heatable systems (process controlled electrical heaters)
- Application capacities are infinitely variable
- Suitable for single or multicomponent systems
- One system to handle a range of different applications
- The only parameter is the speed or the speed profile, which offers easy control
- Optional dispenser drive as additional axis for X-Y linear units (servo technology)
- BUS control technology
- Particularly easy to clean and maintain
- Unit design with low process pressures
- Safe and reliable design

We're not afraid of comparison!

<p>ViscoTec Dispenser</p> <ul style="list-style-type: none"> Quantity independent of viscosity No shear stress of product No pulsation Usually no valves required Highly suitable for products containing solids 	<p>Gear Pump</p> <ul style="list-style-type: none"> Quantity dependent on viscosity High shear stress due to internal volume changes and pressing of product between the tooth flanks High-frequency pulsation Always with valves No solids!
<p>ViscoTec Dispenser</p> <ul style="list-style-type: none"> Exact defining and control of quantity Not influenced by viscosity fluctuations 	<p>Time-Pressure Systems</p> <ul style="list-style-type: none"> Quantity can only be defined by tests, no simple control possible Quantity dependent on: <ul style="list-style-type: none"> temperature pressure batch-related viscosity changes clogging at nozzle
<p>ViscoTec Dispenser</p> <ul style="list-style-type: none"> Simple speed control (always constant material volumes) Only short breaks, as "refilling" is unnecessary Low pressures 	<p>Piston dosing unit</p> <ul style="list-style-type: none"> Problem with speed-dependent control (influence of piston position – material volumes) Time lost through "refilling" High pressures

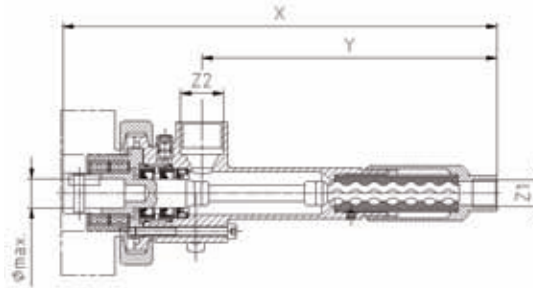


Dispenser Type RD



A dispenser of world-class standard

The ViscoTec dispenser is the obvious choice when precise, fully automatic and reliable dosing is required. This is not just because it is suitable for all types of adhesives and sealants, but also because quantity and speed are so simple to programme – a feature greatly appreciated by many users. It is so easy to adjust the dosing quantity to the travel speed of the robot. If, for example, the robot travels more slowly in a curve than on the straight line, the speed of the dispenser is slowed down accordingly. Spot dosing that can vary in quantity from spot to spot presents no problem either.



	X	Y	Z1	Z2	ø max
4 RD 6	210	142	G 1/4"	G 1/2"	14
3 RD 8	210	142	G 1/4"	G 1/2"	14
3 RD 10	236	168	G 1/4"	G 1/2"	14
3 RD 12	275	198	G 3/8"	G 1/2"	14

all data without guarantee

Type	4 RD 6	3 RD 8	3 RD 10	3 RD 12
Dosing volumes ml/rev.	~0.12	~0.4	~1.1	~2.0
Flow rate, ml/min	0.7 - 24	2.5 - 80	7 - 220	12 - 400
Min. dosing quantity ml ¹⁾	0.005	0.02	0.05	0.1
Accuracy ml +, absolute ¹⁾	0.0006	0.002	0.0055	0.011
Initial pressure, max. bar (input pressure) ²⁾	static 0 - 40 dynamic 0 - 20			
Dosing pressure ³⁾ , max. bar	16 - 80	12 - 60		
Dosing pressure ⁴⁾ , max. bar	0 - 40			
Operating temp. °Celsius	+10 to +40° C			
Operating conditions	Air pressure 1 bar, air humidity 30 - 80 %			
Temperature of medium °C	-20 to +100			
Storage conditions / -temperature °Celsius	dry and dustfree / -10 to +40			
Weight without drive in g	900	930	980	1400
Required driving torque, Nm	1 - 3	2 - 4	3 - 5	
Max. speed, rpm/min	200			

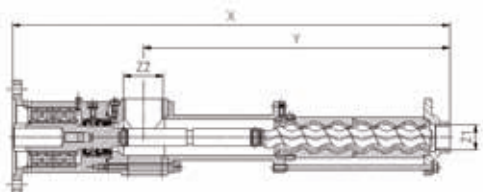
¹⁾ Reference medium approx. 1000 mPas at 20° Celsius
²⁾ Max. 8 - 10 bar recommended for both directions of flow
³⁾ Preferred direction of flow: From Z2 to Z1 (direction of rotation of pump: counterclockwise)
⁴⁾ Opposite to preferred direction of flow: From Z1 to Z2 (direction of rotation of pump: clockwise)
 All pressure data are maximum values for low to high-viscosity media

Dispenser Type VMP

A first-class dispenser

The VMP series of dispensers has the same features as the RD series, but is used for higher dosing flow rates. The 3 VMP 22 type achieves a maximum dosing quantity of 3 litres/minute. The VMP series is therefore particularly suitable for higher volume dosing applications such as:

- Bead application
- Vehicle spraying
- Paint dosing
- 2-component applications



	X	Y	Z1	Z2
3 VMP 15	432	292	NPT 3/4"	NPT 1 1/4"
3 VMP 18	462	322	NPT 3/4"	NPT 1 1/4"
3 VMP 22	492	352	NPT 1"	NPT 1 1/4"

all data without guarantee

Type	3 VMP 15	3 VMP 18	3 VMP 22
Dosing volumes ml/rev.	~4.0	~7.8	~14.8
Flow rate, l/min	0.03 - 0.8	0.06 - 1.6	0.09 - 3.0
Min. dosing quantity ml ¹⁾	0.25	0.45	0.75
Accuracy ml +, absolute ¹⁾	0.025	0.045	0.075
Initial pressure, max. bar (input pressure) ²⁾	static 0 - 40 dynamic 0 - 20		
Dosing pressure ³⁾ , max. bar	12 - 40		
Dosing pressure ⁴⁾ , max. bar	0 - 40		
Operating temperature °Celsius	+10 to +40° C		
Operating conditions	Air pressure 1 bar, air humidity 30 - 80 %		
Temperature of medium °C	-20 to +100		
Storage conditions / -temperature °Celsius	dry and dustfree / -10 to +40		
Weight without drive in kg	7.3	7.5	8.0
Required driving torque, Nm	8 - 15		
Maximum speed, rpm/min	200		

¹⁾ reference medium approx. 1000 mPas at 20° Celsius

²⁾ Max 8 - 10 bar recommended for both directions of flow

³⁾ Preferred direction of flow: From Z2 to Z1 (direction of rotation of pump: counterclockwise)

⁴⁾ Opposite to preferred direction of flow: From Z1 to Z2 (direction of rotation of pump: clockwise)

All pressure data are maximum values for low to high-viscosity media



Dosing control ViscoDos II



Multifunctional dosing control system for all types of volumetric dosing pumps such as ViscoTec eccentric screw pumps, lobe pumps, worm gear pumps or hose pumps. The dosing control is a unique system that enables you to control your flow rate or desired dosing volume simply yet very accurately.

It operates without flowmeters and can be used for all volumetric conveying pumps. Basically, by using a volumetric feed pump, such as in the ViscoTec RD series, a volume of the product dosed or conveyed is exactly defined by the number of revolutions or even by angle degree change.

After calibration (the motor and the pump are matched to the dosing control), you can carry out all the required dosing operations by means of the dosing control. After entering the dosing or conveying quantity, the control calculates how many revolutions the pump has to make.

After starting up, the number of revolutions is measured by the phase shift between current and voltage and the drive is positioned accordingly.

The dosing control is as easy to install as a frequency converter and can be installed subsequently in existing systems.

System requirements:

- Three-phase motor up to 7.5 kW
- Volumetric conveying pump, e.g. eccentric screw pump, lobe pump, hose pump, gear pump or screw pump.

To obtain exact dosing, it is an advantage if the volume is not only defined by the number of revolutions, but also by angle degree change, as in the case of ViscoTec pumps.

Software

- Variable calibration for each pump size (dosing volume per motor revolution)
- Quantity input
- Acceleration and deceleration input
- Freely selectable reverse-flow at end of dosing to prevent dripping
- Speed input
- Automatic restart of filling process after freely selectable break
- Continuous conveying with desired flow rate

Hardware

- Dosing control is installed in a stainless steel housing
- Power output from 0.75 kW to 7.5 kW (depending on size)
- Display and keyboard
- Master switch, switch for start, stop and interrupt
- Terminal strip for external control

Application data

- Dosing quantity: min.: 1/2 the volume from one pump revolution, max.: unlimited
- Accuracy: up to +/- 1/15 of volume per pump revolution
- Speed: shortest dosing time 0.5 seconds
- Continuous conveying: adjustment range: 1:10

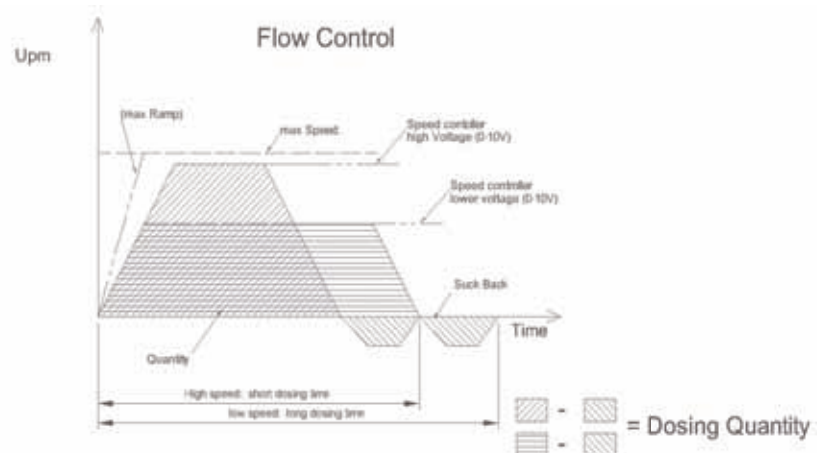
Advantages

- Easy to integrate (power supply line to motor)
- Cost-effective (separate flowmeter is normally not required)
- Easy to operate
- Can also be used for other positive displacement pumps.

Special feature

- PROFIBUS interface for integration into a fully automatic system with the option of telediagnosis.

Signals



ViscoPro

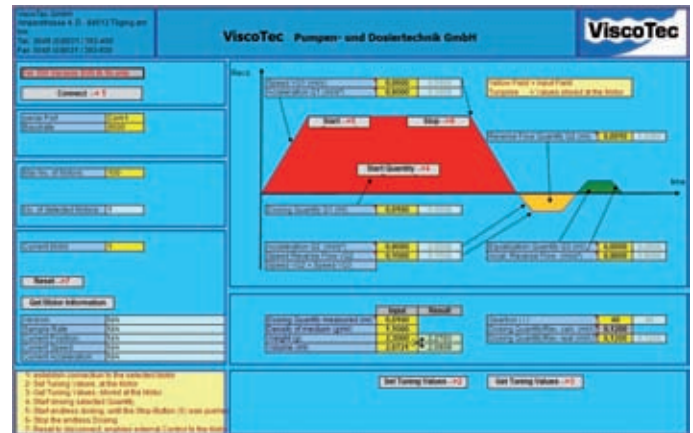


Key features:

- dosing is independent of viscosity
- dosing process is extremely low-shearing and gentle to product structure
- also suitable for highly abrasive or high-content materials
- freely programmable reverse-flow action for a clean thread break at end of dosing
- absolutely reproducible electrical variables for dosing quantity and dosing time
- simplest integration into fully automatic assembly lines
- self-priming, therefore no (or low) product input pressure

Your advantage:

- light weight, optimal choice for robot operations
- highly versatile in use
- no valves required
- user-friendly control

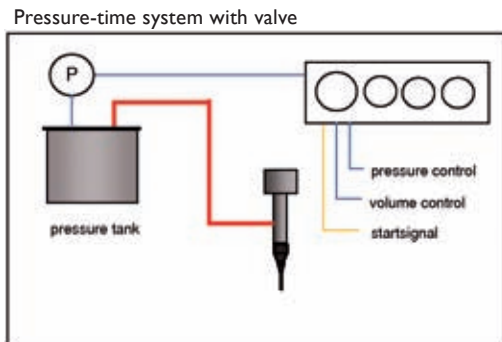


ViscoPro stands for a new drive concept that combines the advantages of the ViscoTec dispenser with the demand for a more compact, yet versatile design. The intelligence of a user-friendly control has been integrated into the drive, so an additional dosing control is very often no longer necessary.

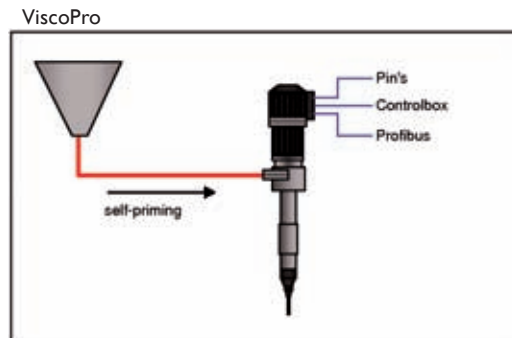
Not only can ViscoPro be implemented where valves are conventionally used – it also offers a wide range of advantages to ensure the precise, repeatable dosing of adhesives and sealants, soldering and conducting pastes, insulating paints or potting compounds.

PC software for programming motor parameters from existing customer-PC with RS232 interface; main variables such as speed ramps, maximum speeds, reverse-flow action and specific dosing quantity in quantitative mode can be programmed here. Since data are stored in the motor, the PC is only necessary for the basic setting or a parameter update, if required.

Comparison of pressure-time control and valve technology



put dosing valve out



put ViscoPro in

New parameter in current time mode: Tank pressure is replaced by dosing speed

ViscoDuo – 2-component systems

Accurate dosing and mixing with 2-component or multi-component systems

When it comes to the exact dosing, mixing and application of multi-component (2-component) adhesives, there's no beating ViscoTec dispensers and systems. The endless-piston principle guarantees exact, continuous mixing and is suitable for a wide variety of products.

Typical features of all 2-component systems are:

- Mixing of adhesives of widely varying viscosities
- Suitable for abrasive, high-viscosity products with solids content
- No shearing of product
- Freely adjustable mixing ratio from 1:1 to 1:100
- Dosing quantity unaffected by viscosity fluctuations
- Suitable for lines as well as spot-application
- Drip-free application thanks to internal reverse-flow feature
- Single design for epoxy resins, polyurethanes and silicones
- Mixing via static or static-dynamic mixing head
- Combinable in any way with different product feed systems
- Self-priming

ViscoTec systems and dispensers are pressure-stable and have no internal flow losses. Therefore they are highly superior in every respect to time-pressure systems or systems with gear pumps.

Heart of the system are two ViscoTec dispensers which provide repeatably accurate dispensing, even with different viscosities or changing pressures. These dispensers are also extremely low shearing, so product handling is gentle and even the dosing of highly sensitive products presents no problem. The dosing quantity depends solely on the number of revolutions, therefore the electronic control of the system is simple.

Various dispenser sizes are available, and so an extremely wide application range with custom solutions can be covered. Via the integrated microprocessor control, it is possible to switch between modes for "dosing = dose set quantity" and "continuous = dosing while signal is present". The mixture is obtained with static mixers selected to suit the respective product.

The ViscoTec 2-component control, ViscoDuo, enables the free programming of:

- shot quantity
- speed
- mixing ratio
- monitoring of pot life (with display of residual time)
- automatic blank shot with programmable blank shot quantity
- maximum number of blank shots



ViscoDuo - 2K-Systems

Some examples of our two-component systems



Barrel emptying systems

Your application is the focus of our attention

The complete system for the reliable conveying and dosing of high-viscous media out of barrels consists of the components: pneumatic lifting device (6 bar compressed air), electrically driven dosing/feed pump and follower plate. Since these can be combined in various ways, we are able to offer a truly customer-specific solution for each application, whether it be the removal of silicone out of a ribbed 200 l drum or the dosing of epoxide from a 20 l hobbock.

Features

- For medium to high-viscosity products (up to 5,000,000 mPas !)
- Ideal for products with a high filler content
- Extremely gentle product handling (no shearing stress)
- Pulsation-free emptying
- Losses < 1 %
- For barrel sizes of 1 l to 1500 l.
- Also suitable for ribbed barrels, plastic containers (also with liners or conical)
- Precise wiping at barrel wall due to follower plate with special lip seal
- Emptying speed is electronically controllable
- Easy to lift and lower
- Pressures up to 20 bar
- No escape of medium at the sides because the follower plate operates almost without pressure
- Optional as completely heated or as double station with automatic switchover
- Electrical drive, minimal compressed-air consumption, very quiet
- Product-pressure can be electronically controlled by the speed (e.g. for pressure-constant supply to a filler)

Function

The heart of a ViscoTec container-emptying system is a ViscoTec dosing pump, which is available in a wide variety of sizes and designs. These pumps have excellent suction characteristics, and so practically no pressure is applied to the product by the pump and the follower plate. The pump is raised to the top by the lifting device and the barrel is placed underneath and fixed in place. The pump with the follower plate is then lowered pneumatically onto the barrel until the follower plate lies on the medium. The barrel is de-aerated by a vent valve (mounted in the follower plate) to ensure that the air between follower plate and product escapes. The emptying process is started by an electrical switch. Depending on the filling level of the barrel, the pump moves

down pressurelessly with the follower plate, making its way to the bottom of the barrel by suction action. In contrast to an emptying process in which the follower plate forces the medium by pressure into a conveyor pump, our pressureless method guarantees that no product is pressed back up the sides past the plate. Once the barrel has been emptied to a negligible residue, the pump is switched off automatically via a level switch. The barrel is then aerated by a vent valve in the follower plate and the pump with the follower plate is raised out of the barrel by means of the pneumatic cylinders. The lifting device is controlled by compressed air, the pump is generally driven by a three-phase motor.



- 1 control
- 2 pneumatic lifting cylinder
- 3 ViscoTec dosing pump
- 4 container with medium
- 5 base frame
- 6 electric drive
- 7 product outlet
- 8 hose system

ViscoTec barrel emptying systems

Perfect emptying



Complete removal of product from the bottom
e.g. fat

The heart of the matter is your product

Our barrel-emptying systems are particularly suitable for:

- silicones
- adhesives
- sealants
- fats
- resins
- soldering pastes
- paint



Precise wiping at barrel wall
e.g. silicone

- Losses < 1%
- Precise wiping at barrel wall due to follower plate with special lip seal
- No escape of medium at the sides because the follower plate moves without pressure

ViscoMT-Special



High end redundant supply-system



Socket-emptying-system

Barrel emptying system ViscoMT-XS



Barrel sizes: 10 – 50 l

Flow rate: up to 3 l/min

Features:

Reliable standard system
for general applications, mobile

Execution/Materials:

Description	Execution/Materials	Options
Base frame	Steel varnished	Stainless steel
Follower plate	1.4571	
Wiping ring	EPDM	Viton, NBR
Pump	VMP	RD
Drive	Fixed speed helical geared motor	
Control	Frequency converter emergency shut-off, reed contact barrel empty, clockwise/counterclockwise rotation, speed regulator	Quantity control or customer requirement

Barrel emptying system ViscoMT-L



Barrel sizes: 100 – 200 l

Flow rate: up to 15 l/min

Features:

Reliable standard system
for general applications, mobile

Execution/Materials:

Description	Execution/Materials	Options
Base frame	Steel varnished	Stainless steel
Follower plate	1.4571	
Wiping ring	EPDM	Viton, NBR
Pump	VMP	RD, RBL
drive	Fixed speed helical geared motor	
control	Frequency converter, emergency shut-off, reed contact barrel empty, clockwise/counterclockwise rotation, speed regulator	Quantity control or customer requirement

Special: paint



Dosing and conveying

Paints and coatings are similar to adhesives in that they often possess a highly sensitive structure and require careful handling in dosing or pumping processes. The abrasive particles and, increasingly, nanoparticles, place high demands on the wear-resistance of the dosing pumps.

Cleaning is also an important aspect in fully automatic systems – it is absolutely essential that this is effected with the minimal use of cleaning agents and that all the sealings fitted are solvent-resistant.

In general, all ViscoTec dosing pumps display the following characteristics and are therefore particularly suitable for applications with paints or coatings:

- extremely gentle on product structure
- resistant to abrasive products
- pulsation-free
- dosing quantity depends solely on the speed
- pressure stability

The careful choice of materials minimizes wear and guarantees long service life. Even paints containing Xirallic® pigments are easily dosed and conveyed by ViscoTec dosing pumps.

For applications involving solvent-based paints, we use the elastomers VisChem or VisTon, which are both solvent resistant and highly elastic. This choice alone provides the materials suitable for all coatings or paints and all commercially available cleaning agents such as acetone or MEK.

The following typical application areas are covered by ViscoTec dosing and feed pumps:

- Spraying of paints and coatings in fully automatic systems
- Dosing of master batches
- Circulation pumps in coating lines
- Dosing of paints, coating composites, pigments or additives in the printing or textile industry

Gear pumps, piston pumps or lobe pumps are not always the best solution. Please ask us about further advantages available for your particular application.

! Xirallic® is a registered trademark of Merck KGaA

ViscoTec Pumpen- u. Dosiertechnik GmbH



PERFEKTLY DOSED!

This simple, yet so important principle characterizes our products just as much as our customer relations. For 25 years we have endeavoured to provide our customers with state-of-the-art technology for the dosing, applying and filling of liquid to pasty media.

ViscoTec Pumpen- und Dosiertechnik GmbH was founded in 1997 and developed out of the former pump sector of the company Resch Maschinenbau GmbH. Over 35 employees pool their 25 years' know-how to produce sophisticated solutions for the world market. Their high level of training guarantees excellence in quality and an attractive price-performance ratio.

OUR PRODUCTS IN DETAIL:

- Dispensers for the range 0.25 ml/min to 3,000 ml/min
- Dosing pumps for the range 0.1 l/h to 10,000 l/h
- Volumetric dosing control systems
- Barrel-emptying systems for products with viscosities up to five million mPas
- Feed systems
- 2-component systems

WHAT DO WE DO?

ViscoTec mainly produces systems for the conveying, dosing, filling and emptying of medium to high viscosity products. We provide detailed consultations and, in the case of particularly difficult applications, carry out extensive testing of your product. Our pumps and installations are optimized to meet your individual requirements, for example, the highest cleaning standards for adhesives.

WHAT ARE OUR SPECIALIST AREAS?

We provide intelligent solutions for any kind of task involving the conveying or dosing of viscous media. You can be sure that all technical and economic aspects are carefully considered when selecting the optimum pump for your application.

We have particularly extensive experience in the following fields:

Adhesives: Whether we're talking about a barrel-emptying system for highly viscous adhesives (a straightforward conveying task) or a difficult sealant bead application, we can supply you with the right dispenser and, if required, the complete installation with control system. The more difficult the product is to handle, the more advantages we have to offer you: Shear-sensitive products or abrasive solids can be dosed just as easily as solvents used for cleaning.

Chemicals: In this field we cover the lot! We handle all viscous, shear-sensitive, solid-content or aggressive products.

Paints and coatings: Safe and gentle conveying and good cleaning.

Your products may be widely varied, but the engineering requirements are always similar.

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