DOPAG

A MEMBER OF THE
HILGER&KERNGROUP

1K glueLine

SOLUTIONS FOR THE APPLICATION OF 1K ADHESIVES AND SEALANTS

Metering 1K materials

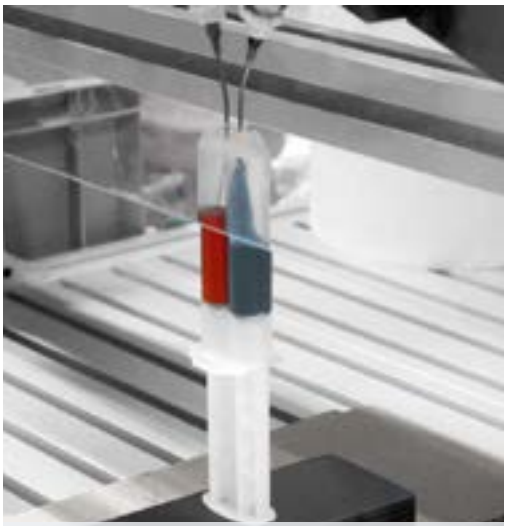
Industrial application of adhesives and sealants

DOPAG single-component systems convey media such as adhesives, sealants, greases and oils with high precision from their original containers to the point of application, where the material is applied to the workpiece either in shot form or continuously in bead form. The systems are fitted with gear, piston or eccentric screw pumps, depending on requirements.
Provided the medium is fluid or has low viscosity, single-component materials can be processed by means of a material pressure tank. For medium to high-viscosity media, drum pumps mounted on a double pump station are suitable for conveying the material. The application can be carried out manually or automatically. Metering technology from DOPAG is used numerous industries, including for household appliances, medicines and many more.

The joining technique of 'adhesive bonding' is well established in vehicle construction, rail vehicle construction, aviation and many other industries for several years. Thanks to newly developed adhesives, a wide variety of materials can now be joined together in industrial production, including metals, plastics and glass. In many of these production processes, weight reductions are now possible in the finished products as a result, especially when joining fibre composite plastics with metal or with other material combinations.

By constantly optimising its plants, DOPAG has taken on a leading role in the market over the last few decades. In addition to precise processing, the adhesive is only applied to the substrate in the specified quantity. This enables an optimum result in terms of appearance and also ensures that no adhesive or sealant are wasted.
All DOPAG systems operate in accordance with the new DIN 2304. This standard defines the professional implementation of bonding processes in operation and enables users to create a well-controlled process from the complex joining technique of 'adhesive bonding'.

Bonding and sealing LED lights



Syringe filling with polyol and isocyanate

Bonding structural profiles for LKW trailers

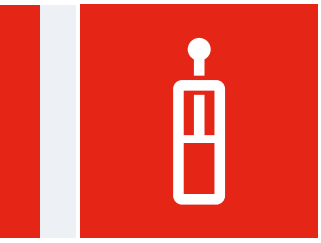
DOPAG always has the right solution

Whether it's individual components or a ready-to-use metering system, DOPAG offers an optimal and cost-efficient solution for every requirement. For example, our high-quality components, such as our pumps and valves, can be integrated individually into existing production lines or system concepts. This also includes our innovative metering pumps, such as our gear, piston and eccentric screw pumps.

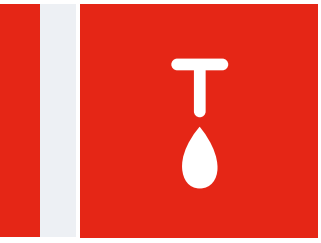
DOPAG also provides complete metering systems tailored to the specific requirements of your production processes. If the process requires it, we can provide additional automation units.

Project planning, coordination and construction of the systems are carried out in-house, always in close consultation with customers and partners. In our technical centre, we test system concepts as well as the latest technologies and materials on site.

Products for the entire process



Conveying & pumping 06



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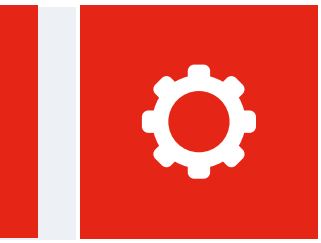

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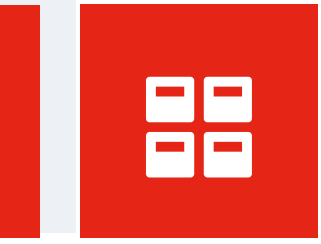


System supplier 34



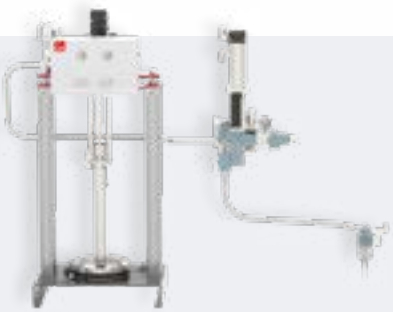










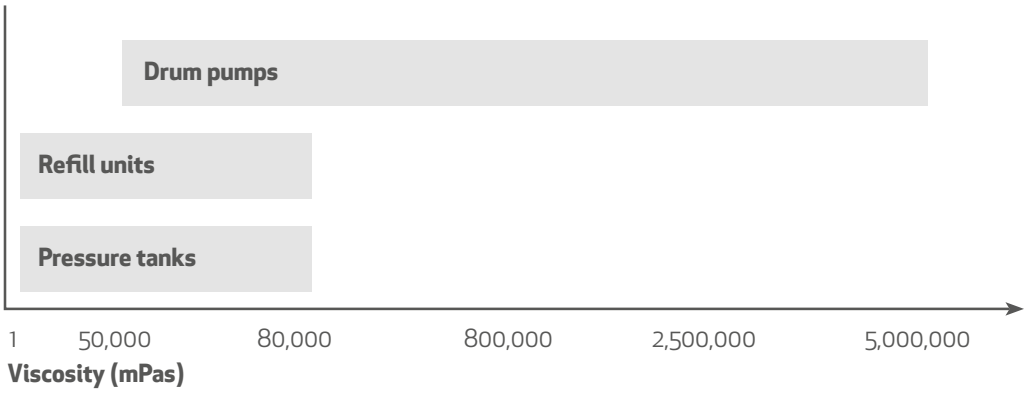


Conveying and pumping

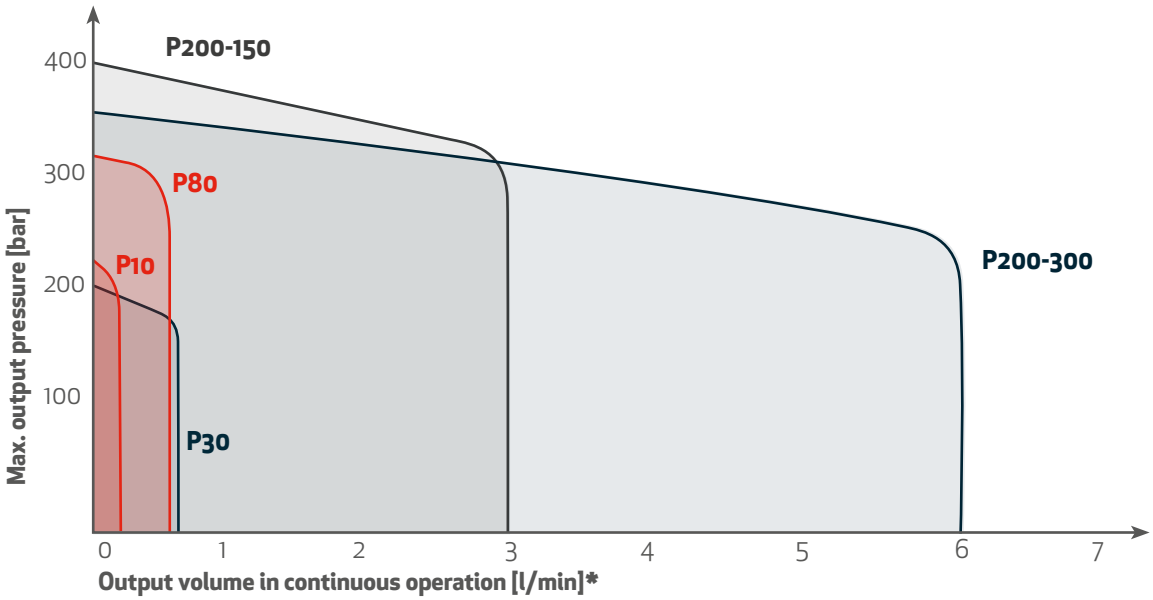
Reliable processing of adhesives

To ensure proper metering, it is important that adhesives are conveyed efficiently and without air any pockets (air bubbles). Only through continuous, reliable material supply can optimal metering results be ensured. Depending on the material properties, process and container size, different supply systems may be chosen. DOPAG's product range offers a comprehensive range of solutions for this. This includes drum and barrel pumps as well as pressure tanks. DOPAG uses established technology in all of its systems – gear, piston or eccentric screw pumps. Thanks to the modular design, a conveyor system that is tailored precisely to the application and material used can be selected.

Viscosity ranges of feeds



Working ranges of drum and barrel pumps



*Short-term increases in output volumes are possible

Drum and barrel pumps

Piston pumps for increased performance

This type of DOPAG drum and barrel pump is only available in the form of a double-acting chop check pump. In addition to adhesives, it also pumps greases and oils, sealants, polyurethanes or silicones with viscosities of up to 5.0 million mPas directly and neatly from original containers. The pumps are used both to supply individual workstations and for central material supply systems. They are modular, robust, economical, highly reliable, and easy to maintain and service.

Product properties

- Convey medium to high-viscosity materials
- Conveying capacity of up to 6 litres/minute with 20 double strokes
- Transmission ratio of up to 75:1
- Max. viscosity 5.0 million mPas
- Differential piston pumps with fast-switching air motor
- 1 or 2-hand safety operation
- Modular structure with a range of accessories
- Various types of seals/materials available

Double drum pumps

There are many applications where a continuous supply of material needs to be ensured at all times. For these cases, DOPAG also offers all drum and barrel pumps in tandem form. This features an automatic switchover between the pumps, so that the container can be changed without interruption or time pressure. Clean handling as well as low residual quantities remaining in the barrel ensure efficient production design. From size P30 up, all pumps are available in tandem form.

Modularisation

The modular structure of the drum and barrel pumps provides numerous combination options. Depending on the material properties, container dimensions and desired functionality, there are many different options that can be selected aside from the standard version.

Standard version

- Control unit
- Drive cylinder
- Piston pump follower plate with double stroke
- Jack
- Chassis

Options

- Terminal block
- Material filter
- Mixing block
- Drum roll-up aid

Refill units

To ensure uninterrupted production, automated refilling of the material pressure tanks is essential. DOPAG offers various compact refill units for this purpose. The fill level probe in the material pressure tanks enables refilling to be started automatically from a defined material quantity. This ensures that there is always sufficient conditioned material available for production and machine downtime is avoided.

Depending on the material type, the following refill units are available:

- If the material needs to be stirred cyclically, this can be performed using an agitator and cyclic operation. Homogenisation during drum change is also possible.
- For more fluid systems, in particular, isocyanate, DOPAG offers refilling via a membrane pump.
- Silica gel air drying for use with media sensitive to atmospheric moisture
- Depending on material consumption, 200 L drums or 20/30 L containers can be selected. Refilling from 1,000 L containers is also possible. In the case of non-self-levelling materials, DOPAG offers a wide range of drum and barrel pumps.
- Dual refill units are optionally available for quick, convenient drum changes. Here, two material drums are positioned side by side on the collection tray, and the drums are replaced by swivelling the bell housing.

Pressure tanks

Media with viscosities ranging from highly fluid to approx. 80,000 mPas can be conveyed directly from pressure vessels by means of compressed air and then applied. The tanks can be used within a system as intermediate storage or as the main feed. Depending on the requirements, different container sizes and various options are available for selection. Visual level indicators or electrical level probes provide information about the amount of material in the tank at any given time. Alternatively, the pressure tanks are also available with fittings provided.

Product properties

- For low-viscosity media such as paints, oils and preservatives and all resins, including PU, epoxy and silicone
- Modular structure
- Operating pressure max. 6 bar (excess pressure)
- Vacuum-compatible
- Outlet below with ball valve
- Max. viscosity approx. 80,000 mPas
- Recirculation
- Silica gel air drying for use with media sensitive to atmospheric moisture

Options

- Air maintenance unit
- Material filter on outlet
- Agitator
- Fill level sensor
- Heating sleeve
- Gauge glass
- Manual refilling via funnel

Material pressure regulators

Pulsation-free metering at optimum pressure

Material pressure regulators reduce the pressure of the material being conveyed down to the necessary working pressure, A material pressure regulator with a diaphragm is available for abrasive or reactive materials. Material pressure regulators of this type are ideally used for the processing of reactive, moisture-sensitive, abrasive media (ball/seat design made from hard metal), such as epoxy resin, polyurethane and various other materials. The spring chamber is sealed by means of a diaphragm.

Product properties

- Pressure reduction and smoothing of pulsations
- Standard sizes clear span 4, 8 and 12 mm
- Max. input pressure 250/400 bar
- Max. pressure reduction of 1:5
- Different output pressure (depending on version)

Options

- Manometer
- Heating
- Replacement sieve in different mesh sizes
- Mounting bracket

Technical specifications material pressure regulator with diaphragm

Version *	LW4 / 50 bar	LW4 / 150 bar	LW8 / 50 bar	LW8 / 150 bar	LW12 / 50 bar	LW12 / 150 bar
Clear span ø [mm]	4		8		12	
Flow rate at 50,000 mPas [l/min]	<0.5	<1.0	0.5–12.0	1.0–24.0	3.0–24.0	6.0–24.0
Input pressure max. [bar]	12–250	30–250	12–250	30–250	12–250	30–250
Output pressure max. [bar]	4–50	10–150	4–50	10–150	4–50	10–150
Connection input [G]	3/8"				1/2"	
Connection output [G]	4–50	10–150	4–50	10–150	4–50	10–150
Dimensions (AxB) [mm]	55 x 55				65 x 65	
Height max. (C) [mm]	200				210	

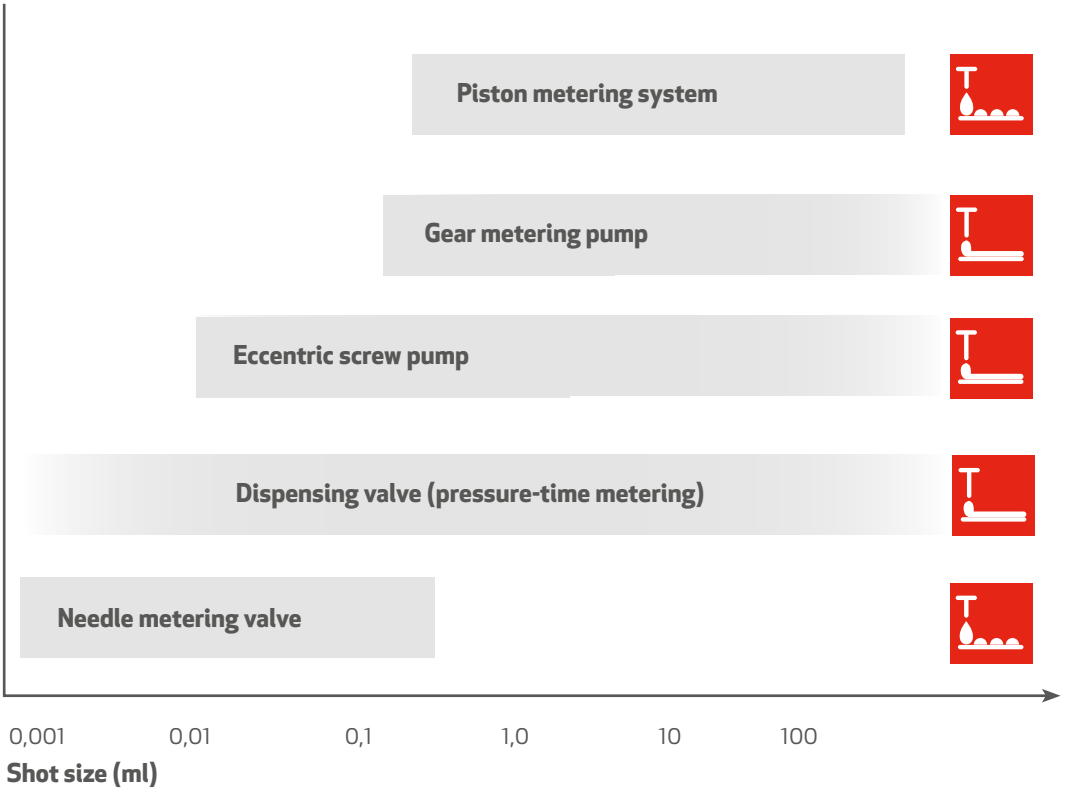
* Other versions available on request

Metering and application

Maximum precision for your applications

Metering and dispensing valves from DOPAG meet all the criteria required for optimal metering results – high precision, excellent reproducibility and high quality standards. DOPAG offers different valve types with two operating principles. Needle metering valves meter volumetrically (dot application). In each metering cycle, the contents of the metering chamber are discharged, triggered by a signal. The benefits of this are high repeatability and flexibility thanks to adjustable volumes. In the case of dispensing valves, however, the metering volume is regulated via the material pressure and the opening time of the valve needle. This enables small amounts to be applied in bead form or any amount to be applied continuously. Depending on the application, a flow meter can also be used in combination with a gear metering pump.

Shot ranges of the metering techniques



Gear metering pump

Metering materials continuously and precisely

Gear metering pumps from DOPAG offer all the features that are required in industry today. They meter a wide range of materials, including adhesives, sealants and lubricants, continuously and with consistently high precision. They are also designed in such a way that they are extremely robust, have a high level of efficiency and are practically pulsation-free.

Gear metering pumps are extremely versatile. Each version is available with different pump clearances, making them suitable for metering low to high-viscosity as well as pasty media. DOPAG gear metering pumps are suitable for use in general engineering as well as in other industries, such as aviation or wind energy.

Product properties

- Versatile use thanks to different pump sizes, clearance classes and seal systems.
- High-quality, hardened steel ensures operation even under difficult conditions.
- Special coating for protection against excessive wear and to ensure a longer service life
- Metering optionally available with gear flow meter
- Special versions available for special applications

Seal systems

The gear metering pump can be fitted with one of four different seal systems.
The seal systems have a modular design and can be replaced.

1. URF high-pressure seal: This seal type ensures optimum fill level with highly viscous media by keeping the input pressure of the pump as high as possible.

2. VCR sealing sleeve: This seal system is always used when the materials have a high proportion of fillers and when high chemical resistance is required.

3. RSS 3-fold shaft seal: This seal type is used to good effect in a large number of applications. It can be used to cover a wide range of requirements.

4. MSE mechanical seal: This seal is particularly suitable for highly filled materials, as it is extremely low-wear.

	URF	RSS	VCR	MSE
Abrasive media	0	-	0	+
Max. input pressure [bar]	150	6	20	15
Temperature range [°C]		by 120	by 120	-20 to +120
Oil and grease resistance	++	++	++	++
Acid resistance	++	++	++	++
Alkali resistance	++	++	++	++
Wear resistance	+	+	+	++

Pump sizes

The pump size and speed determine the conveying capacity. The pump size is indicated in ml per revolution.

Pump parameters										
Flow volume [ml/U]	0.1	0.3	0.6	1.2	1.8	2.4	3	4.8	6	10
Max. pressure [bar]				200					150	100

Piston metering system

Reliable metering with short cycle times

Piston metering units are used for processing 1K media, especially when short cycle times are required. All that is required is appropriate material supply and a metering calculator. The material is discharged in shot form at a freely configurable discharge rate or without interruption using a double piston system, e.g. in bead form. Different sizes are available depending on the requirements of the application. Combing two piston metering units together also enables 2K applications with this system.
It is powered by a servo motor, with a spindle converting the rotational motion into linear motion, thus ensuring precise piston feed.
Thanks to various design, there is practically no need for any maintenance work, which reduces service intervals and increases the durability of the products.

Product properties

- Modular design enables a wide range of applications, variable mixing ratio and variable discharge quantity
- Maximum precision thanks to metering and mixing at point of application
- ±1 % metering precision
- Multiple shots with one piston volume enable short cycle times
- High process reliability thanks to
  - Dead space design
  - Pressure monitoring in metering chamber
- Reduced maintenance work thanks to
  - Specially guided metering pistons
  - Compensating coupling between drive and metering piston
  - Hermetic sealing of piston with sealing medium

Technical specifications

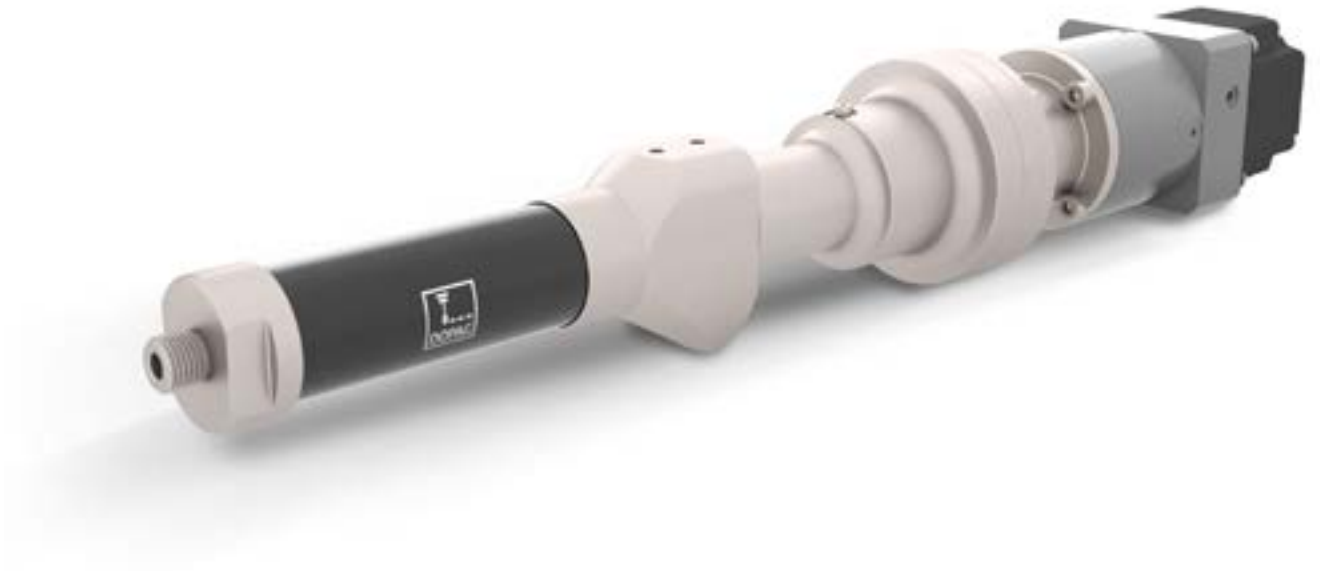
Size	ø6	ø10	ø20	ø36
Max. metering volume	1.8 ml	7.8 ml	31 ml	101 ml
Min. metering volume (5 mm stroke)	0.14 ml	0.4 ml	1.6 ml	5.1 ml
Metering stroke	65 mm	100 mm	100 mm	100 mm
Max. output rate (Vmax)	2.75 ml/s	7.8 ml/s	31 ml/s	101 ml/s
Max. operating pressure	160 bar	160 bar	100 bar	100 bar
Viscosity range*	50–1,000,000 mPas	50–1,000,000 mPas	50–1,000,000 mPas	50–1,000,000 mPas
Max. dimensions	102 x 320 x 596 mm	116 x 365 x 759 mm	116 x 365 x 769 mm	150 x 390 x 858 mm
Weight	Approx. 9.3 kg	Approx. 11.8 kg	Approx. 14.9 kg	Approx. 26.9 kg

* Lower on request

Eccentric screw pump

Continuous metering of abrasive materials

The eccentric screw pump is a high-precision volumetric metering system that operates continuously and pulsation-free. The rotational motion of the eccentric screw ensures highly precise, constant metering, particularly in the case of small output rates from 0.1 ml/min. The special rotor-stator combination prevents excessive wear when processing abrasive materials. This guarantees a long service life and high cost-efficiency.



Product properties

- Variable discharge rate from 0.002 ml
- Output rate of 0.1 to 4,400 ml/min
- Speed of 1 to 150/400 rpm (depending on model and medium)
- Maximum input pressure of 6 to 8 bar
- Maximum differential pressure of 10 to 20 bar
- Ideally suitable for all viscosities from highly fluid to pasty

Thanks to progressive cavity pump technology, liquids and pastes with up to 60% filler content can be metered with high precision. The metering quantity can be adjusted completely linearly. This enables a metering precision of ± 1% and better.

Sizes

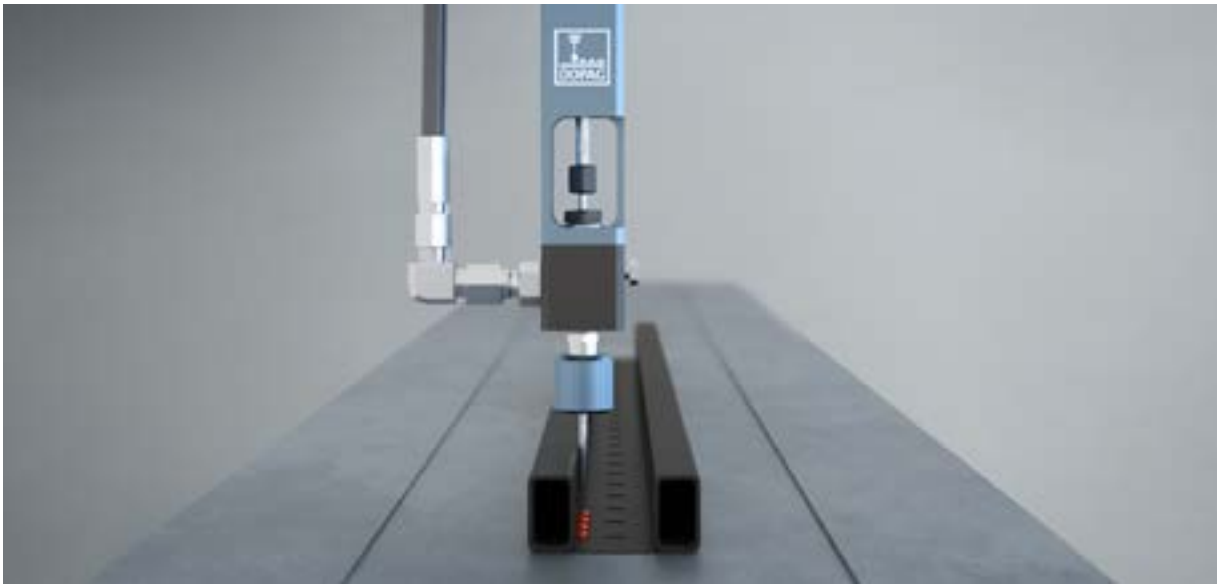
Size	Flow volume ml/rev	Input pressure bar	Operating pressure * bar	Speed range * min. $^{-1}$	
				min.	max.
1	0.01 / 0.05 / 0.15	max. 6	max. 10	1	150
2	0.30 / 1.00 / 2.00	max. 8	max. 20	1	150
3	4.00	max. 8	max. 20	1	150

* Depending on viscosity

Needle metering valves

Metering small volumes with high precision

Needle metering valves are suitable for dot-form metering of low to high-viscosity media. They enable very small quantities of up to 3 ml per shot to be dispensed with high reproducibility and short cycle times. The valve consists of two structurally distinct parts. The advantage of this is that the material cannot penetrate the drive cylinder and impair the movement of the valve needle. Needle metering valves therefore offer high reliability and low maintenance. The volume of the metering chamber, the shot size, is configured within a predefined range via mechanical adjustment. The metering cycle can be controlled either pneumatically or electrically by means of a solenoid valve. The valves can be used in manual applications with a handle as well as in fully automated processes.



Product properties

- Dot application (volumetric metering)
- Metering volume per shot 0.0012–3.00 ml (depending on variant)
- Material input pressure 3–50 bar
- Prepared for stroke detection
- Various types of seals/materials available

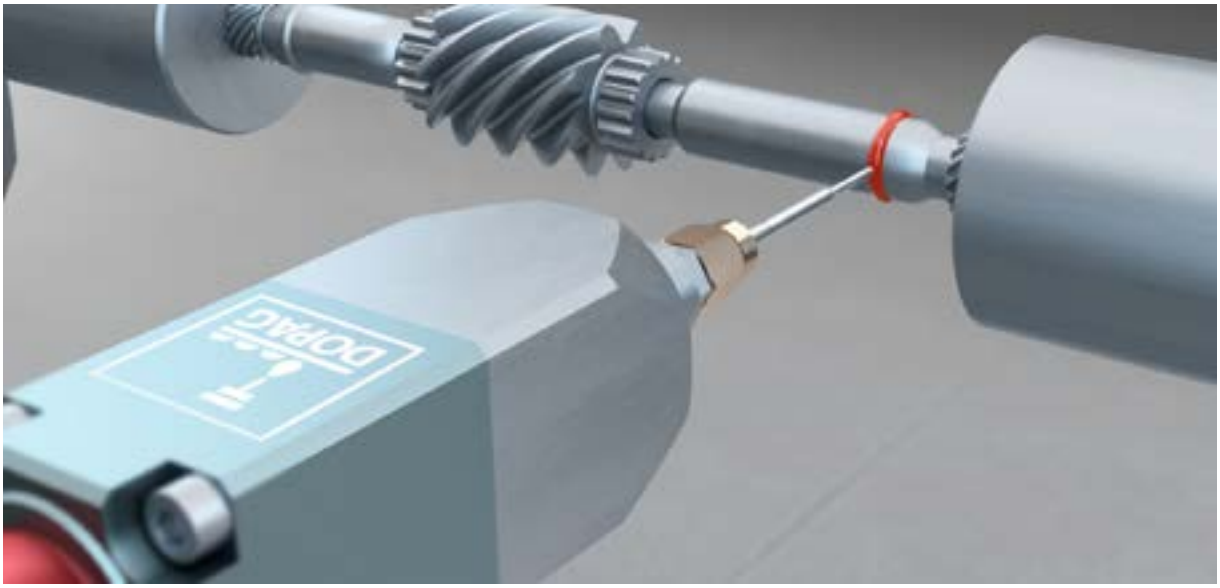
Options

- Solenoid valve plate 24 V
- Transducer with various cables
- Cannula connection with various cannulas
- Micro-flow sensor
- Handle pneumatic/electrical

Diaphragm dispensing valves

Intelligent solution for the highest standards

Diaphragm dispensing valves can be used for continuous dispensing of various materials. These can be low to high viscosity, filled and unfilled media, as well as abrasive and chemically reactive 1K materials. The pneumatic and metering parts of the valve are separated by a diaphragm. This means that only the valve head and the diaphragm come into contact with the material. Stroke adjustment for the valve needle is carried out by altering the size of the opening cross-section. The back suction effect prevents the material from dripping after dispensing. The valve is also very easy to maintain.



Product properties

- Continuous applications (pressure-time metering)
- Clear span (LW) 2, 4, 8 and 12 mm
- Material input pressure max. 160 bar
- Back suction effect (adjustable)

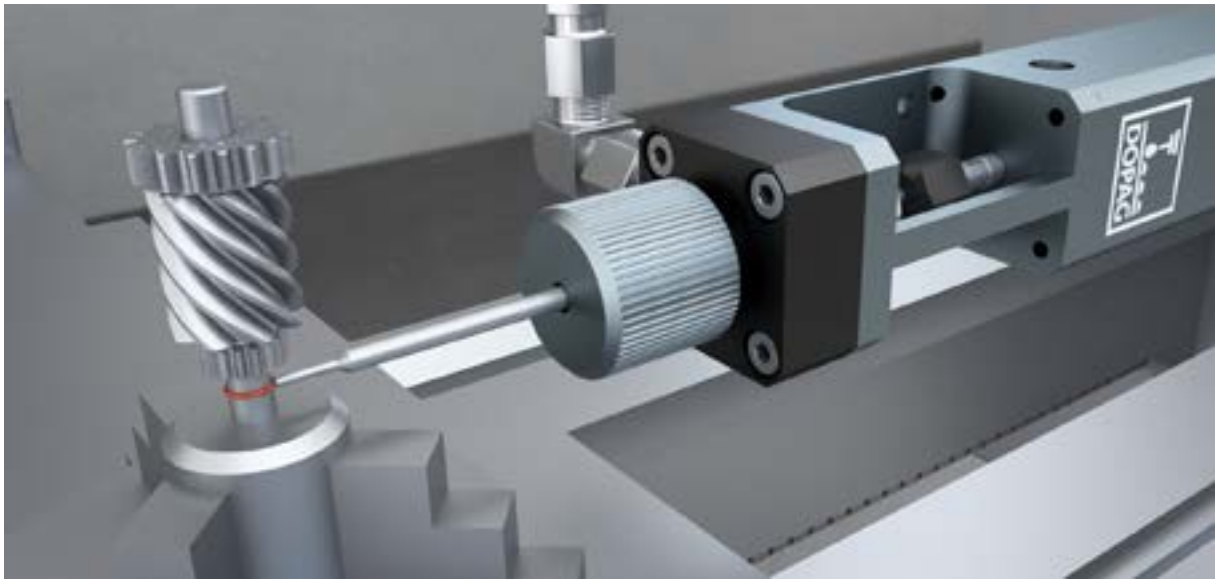
Options

- Solenoid valve plate 24 V
- Cannula connection with various cannulas
- Handle pneumatic/electrical
- Valve heating with or without plug 230 V AC / 200W

Dispensing valves

High flexibility with continuous discharge

Dispensing valves are suitable for the continuous discharge of low to high-viscosity materials based on the pressure-time metering principle. The dispensing valve consists of two structurally distinct parts. The advantage of this is that the material cannot penetrate the drive cylinder and impair the movement of the valve needle. The size of the opening cross-section is regulated by means of the stroke adjustment. The valve needle is sealed against the valve head space by means of an adjustable special seal. This ensures clean, precise metering at all times.



Product properties

- Continuous applications (pressure-time metering)
- Clear span (LW) 1, 2.5, 6, 8, 12 and 16 mm
- Material input pressure max. 250 bar
- Prepared for stroke detection
- Various types of seals/materials available

Options

- Solenoid valve plate 24 V
- Transducer with various cables
- Cannula connection with various cannulas
- Handle pneumatic/electrical

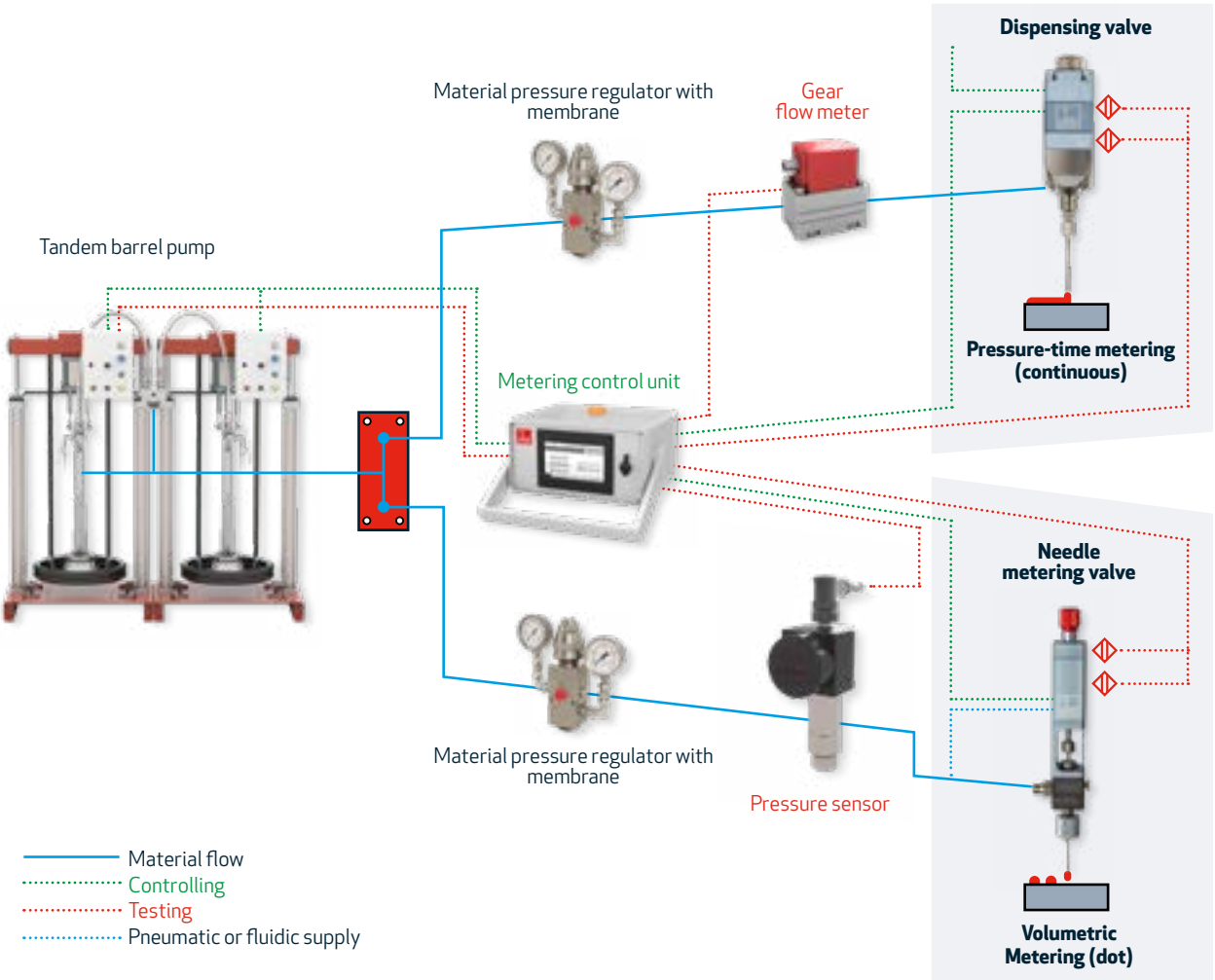

DOPAG

Testing and controlling

Reliable and reproducible metering

Metering processes are shaped by short cycles, high repetition rates and tightly defined tolerances. In addition, often only very small amounts are applied. It is therefore even more vital that the metering is reliable, precise and reproducible. The process capability and the repeatability of an application must be controlled and documented in modern production processes. These requirements should be precisely defined and taken into account when producing the system concept. DOPAG offers a comprehensive range of testing and control technology, including, gear flow meters, light barriers, pressure sensors and metering control units. In the system design, DOPAG coordinates process control and monitoring with the customer in line with the particular application and combines this with the appropriate pumps and metering components.

Pressure/time flow chart and volumetric metering



Gear flow meter

Precise monitoring of metering

DOPAG has developed the gear flow meter specially for use in its own metering and mixing systems. In the processing of single-component media such as greases and oils, it precisely measures the flow rate during the metering process. The measuring principle is based on the volumetric gear displacement system, which offers high precision and pressure resistance. The measuring unit is based on a pair of precisely fitted gears placed in the housing of the flow meter. The rotation of the measuring unit is detected gear by gear by a non-contact signal transducer system and converted into digital pulses. The metering unit, a gear flow meter combined with a flow-regulating and dispensing valve, is used to ensure precise discharge or filling of larger quantities.

Product properties

- Monitoring, regulating and controlling metering
- Material-guided components made from stainless steel
- With pulse multiplication
- Gear volume 0.04 / 0.2 / 0.4 / 2 cm^3
- Available in ball bearing or plain bearing variants

Options

- Sensors
- Various connection and adapter plates
- Heated connection plates
- Connection cable

Metering control unit

Linking and controlling metering components

The MR40 metering control unit was specially designed by DOPAG to manage complex metering processes. It can be integrated easily into systems with a metering valve as well as into 1K metering units with a dispensing valve. The control unit enables communication between the individual system components and coordinates the various features of the metering components. In addition, the software enables various metering programmes to be stored, which can be accessed as required and according to the application. The metering control unit features interfaces for connection to various material feeds and is compatible with measuring devices such as gear flow meters and other accessories. It can be used either as a system control unit or as an interface between a higher-level system control units and the metering system.

Product properties

- Power supply 230 VAC 50 / 60 Hz
- 7" touch panel for operation
- USB port for program updates
- Indicator lamp with buzzer in case of error messages

Options

- Profibus, Profinet or Ethernet IP module
- Various connection and heating cables
- Display protective film

Types

- Desktop housing: plastic, 370 x 330 x 200 mm, with clamps
- Wall housing: tin, 400 x 400 x 210 mm, with mounting brackets

Stroke detection

Reliable monitoring of metering process

With stroke detection, the metering process can be monitored for various valve types. Here, the stroke movement of the metering needle or metering piston is detected. This signal serves as an indicator for optimum valve functionality and improves process reliability in automated applications.

Suitable with:

- Needle metering valves
- Dispensing valves

Pressure sensors

Controlling shot valves

Pressure sensors are used either securely mounted on shot valves or positioned upstream within the system. They display the respective material pressure or transmit this to a measuring unit. In the case of vectodis and the 1K gear system, they are used for process monitoring.

Suitable with:

- Integration in system (digital/analogue)

Accessories
Additional components

The comprehensive range of accessories combines the metering components and pumps in a single complete system. Our technicians would be happy to help you choose the right components:

- Distributor blocks
- Heating hoses
- Pneumatic hoses
- Material hoses
- Manometer
- Material filter
- Mixing tubes
- Check valves
- Adapters
- Heating

System supplier
All in one

High-quality components from DOPAG are available individually and can also be put together in the form of a complete system solution.

The required pump technology, metering system and discharge unit are selected according the specific application.

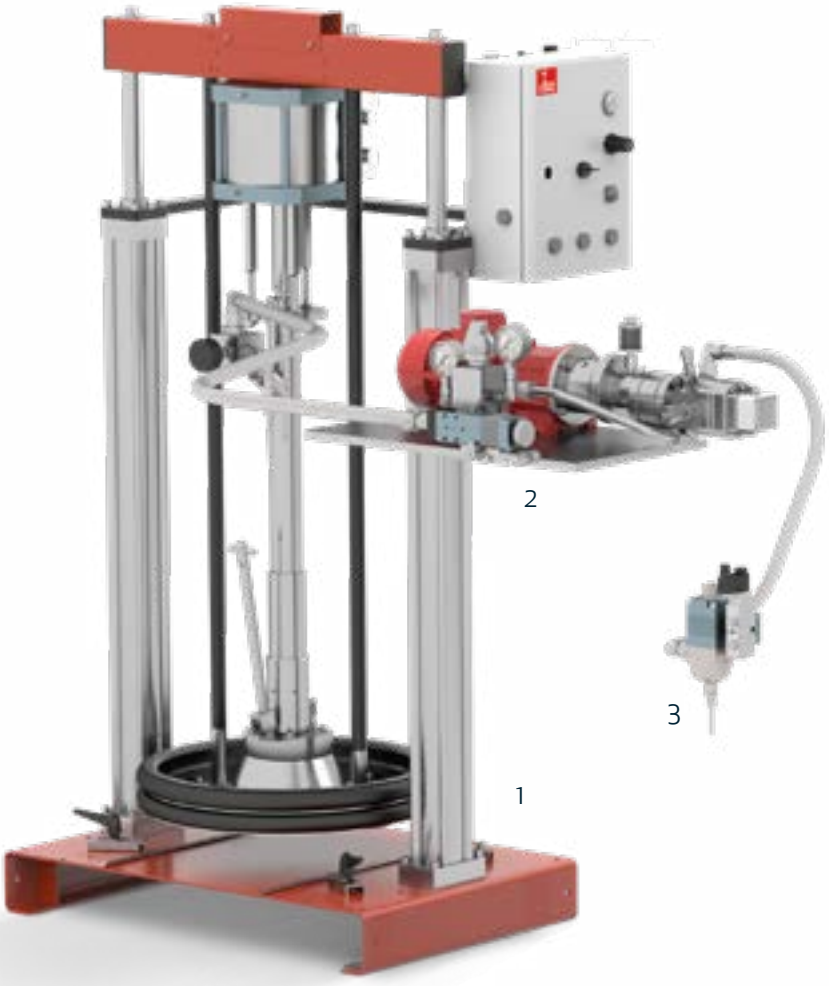
The system can also be integrated into an automation unit.

eldodis

1K gear metering system

DOPAG developed the eldodis gear metering system specially for the processing of medium to high-viscosity single-component materials. The material is input via a feed pump, a material pressure tank or by means of a cartridge-extracting device. A material pressure regulator ensures constant input pressure. A shut-off valve can optionally be installed in front of this to provide additional protection for the gear metering pump. The metering pump, powered by a gear motor, conveys the material to a dispensing valve where continuous material discharge takes place via a nozzle or cannula.

The conveying capacity of the system is largely determined by the size of the gear metering pump and the pump speed. The latter can be controlled by means of a frequency converter built into the control unit. A volume counter can be installed downstream of the gear metering pump to check or also control the metered quantity in a closed loop and to increase process reliability. All components are connected to a metering control unit. This also enables integration into partially or fully automated production or assembly processes through all standard interfaces.



1. Drum pump
2. Piston metering pump
3. Dispensing valve
4. Metering control unit

4

Product properties

- The gear metering pump can be fitted with one of four different seal systems.
- Coated variants against wear and for poorly lubricating media
- Different versions for different viscosities and fillers
- ± 1 % metering precision

Technical specifications

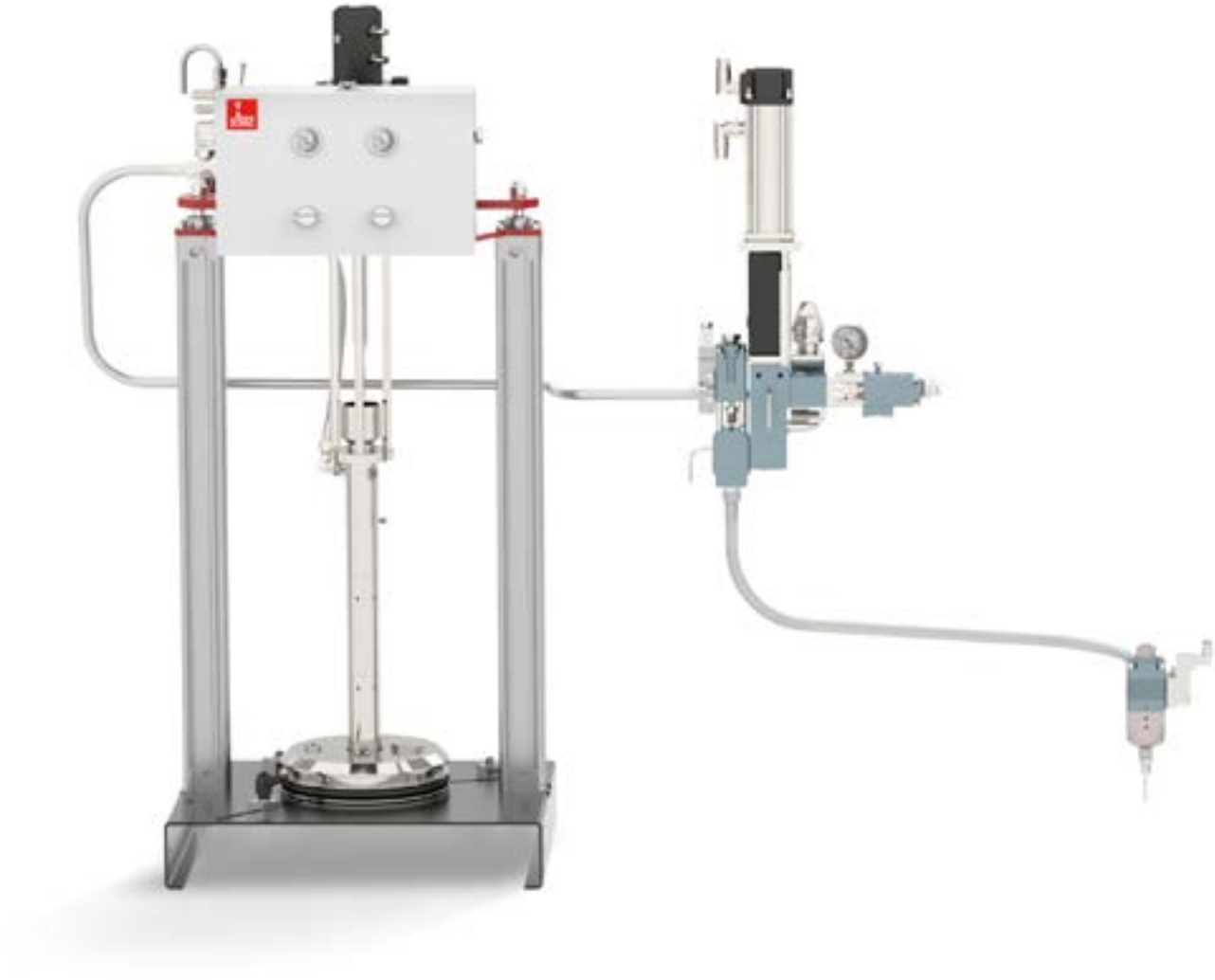
Material discharge	From 1 ml/min, depending on viscosity
Operating pressure	Up to 200 bar, depending on material and discharge rate
Material supply	Material pressure tanks 4, 12, 24, 45, 60 or 90 L, larger available on request And/or barrel pumps
Viscosity range	50 to 80,000 mPas, with material pressure tank Max. 150,000 mPas, with barrel pumps*
Material properties	Unfilled, filled, abrasive
Operating voltage	400/230 VAC 3/N/PE / 50/60 Hz
Compressed air supply	6 bar max.
Dimensions, W x H x D	Modular structure, so no specific machine dimensions
Weight	Modular structure, so no specific machine weight

* Higher available on request, depending on rheological properties of material

vectodis

1K piston metering system

The vectodis metering system is suitable for processing single-component media. The material is discharged in shot or bead form. The material is taken from the original container via a feed pump and fed to a piston metering unit with a servo motor. A material pressure regulator keeps the input pressure at the piston metering unit constant. The material is discharged via a dispensing valve located at the outlet of the piston metering unit. The metering control unit enables communication between the individual system components and coordinates the various features of the metering components. It can be operated conveniently via a touch panel. All the relevant process data is displayed here. The metering control unit enables features such as speed-proportional metering, which allows vectodis to be combined with an industrial robot. The software also provides modern features such as pre-compression and leakage control for reliable, reproducible application over the long term.



1. Drum pump
2. Gear metering pump
3. Dispensing valve
4. Metering control unit

rotordis

1K eccentric screw metering system

rotordis is an progressive cavity metering system designed for conveying and metering single-component materials. It is suitable for water-thin to paste-like, highly viscous media. The medium can be supplied from pressure tanks or drum pumps, depending on the viscosity. A material pressure regulator ensures constant input pressure. It is generally applied directly from the metering system onto the component. Together with the servo-motor drive, this enables both dynamic metering and a controllable back suction effect for a clean thread break. In the case of limiting ambient conditions, a hose connection and dispensing valve can also be used.

The heart of the system, which consists of only two components, is the stator-rotor combination. This is a volumetric metering system that is sealed leak-free. It conveys the material continuously through the system without volume limitation, with low shear and gently in the axial direction, making it particularly suitable for filled media.

The electronic metering control unit, which is specially customised for this metering system, ensures optimal customisation of all application-specific parameters and supports integration into automated production processes through a standardised interface. The integrated touch panel ensures simple, clear communication with the operator.

3

1. Material pressure tank
2. Eccentric screw pump
3. Metering control unit

Product properties

- Uninterrupted metering
- Speed-proportional conveying
- Valve-less system
- Conveying of abrasive media
- Low pulsation and shear
- High repeatability and metering precision, ± 1 %

Technical specifications

Series	1	2	3	4
Nominal size [ml]	0.01	0.05	0.15	0.30
Metering quantity [ml/rev]	0.013	0.059	0.163	0.3
Flow rate [ml/min] *	0.13 – 1.95	0.59 – 8.85	1.63 – 24.5	3.0 – 45.0
Min. metering volume [ml] **	2 x 0.002	2 x 0.008	2 x 0.01	2 x 0.03
Speed range (min ... max***) [min^{-1}]	10 ... 150	10 ... 150	10 ... 150	10 ... 150
Pwork (Inlet pressure) [bar]	0 – 6			
Pmax (Max. pressure) [bar]	10			
Metering accuracy	± 1 %			

* At speed range 10–150 rev/min
** Depending on material properties, nozzle size, alignment of PCP etc.
*** Depending on viscosity

Automation for 1K metering applications

For automated metering, DOPAG offers production cells that can be customised modularly to different applications. In addition to standard cells without component feed, individual production cells are provided based on the specific requirements. This means that several production steps can be fully automated, such as plasma pre-treatment during the joining process.

DOPAG offers a complete inline solution for fully automated implementation of several work steps in sequence. For example, the plasma pre-treatment and adhesive bonding and sealing steps, as well as the joining processes, can be performed in three interconnected cells.

Technical specifications

	Cell type 1	Cell type 2	Cell type 3
Size (W x D x H), mm	1200 x 1200 x 2400	1600 x 1500 x 2400	1800 x 1700 x 2400
Load carrier dimensions (W x D), mm	800 x 500	1000 x 700	1200 x 900
Robot type	FANUC LR Mate 200iD	FANUC LR Mate 200iD/7L	FANUC M10iD/12
Control panel	Self-explanatory operator guidance for configuring and controlling the machine 10,1" handheld operating box, 18" optional control panel		

Options and accessories

- Modular design, individual customisation
- Simple workpiece carrier pick-up, manually or pneumatically operated
- Double (tandem) workpiece carrier pick-up, manually or pneumatically operated
- Safety door, pneumatically operated
- Access protection through light curtains, scanners, step mats
- Barcode reader for individual, automated selection of machining programme
- Connections for extraction systems
- Camera systems for identification and location checking of components

Production cell

Line integration-capable production cells

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We are one of the world's most experienced manufacturers of high-quality metering technology. Wherever adhesives, resins, silicones or lubricants are metered and applied in industrial production, we offer reliable, precise solutions. We provide systems and components for highly automated production processes, including for the automotive, wind, household appliances and electrical industries, as well as for aviation.

DOPAG is part of the HILGER & KERN GROUP, a reliable supplier and a development and service partner to industrial companies in a variety of market segments for almost 100 years. The group employs around 350 people and has subsidiaries and distributors in more than 40 countries.

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