



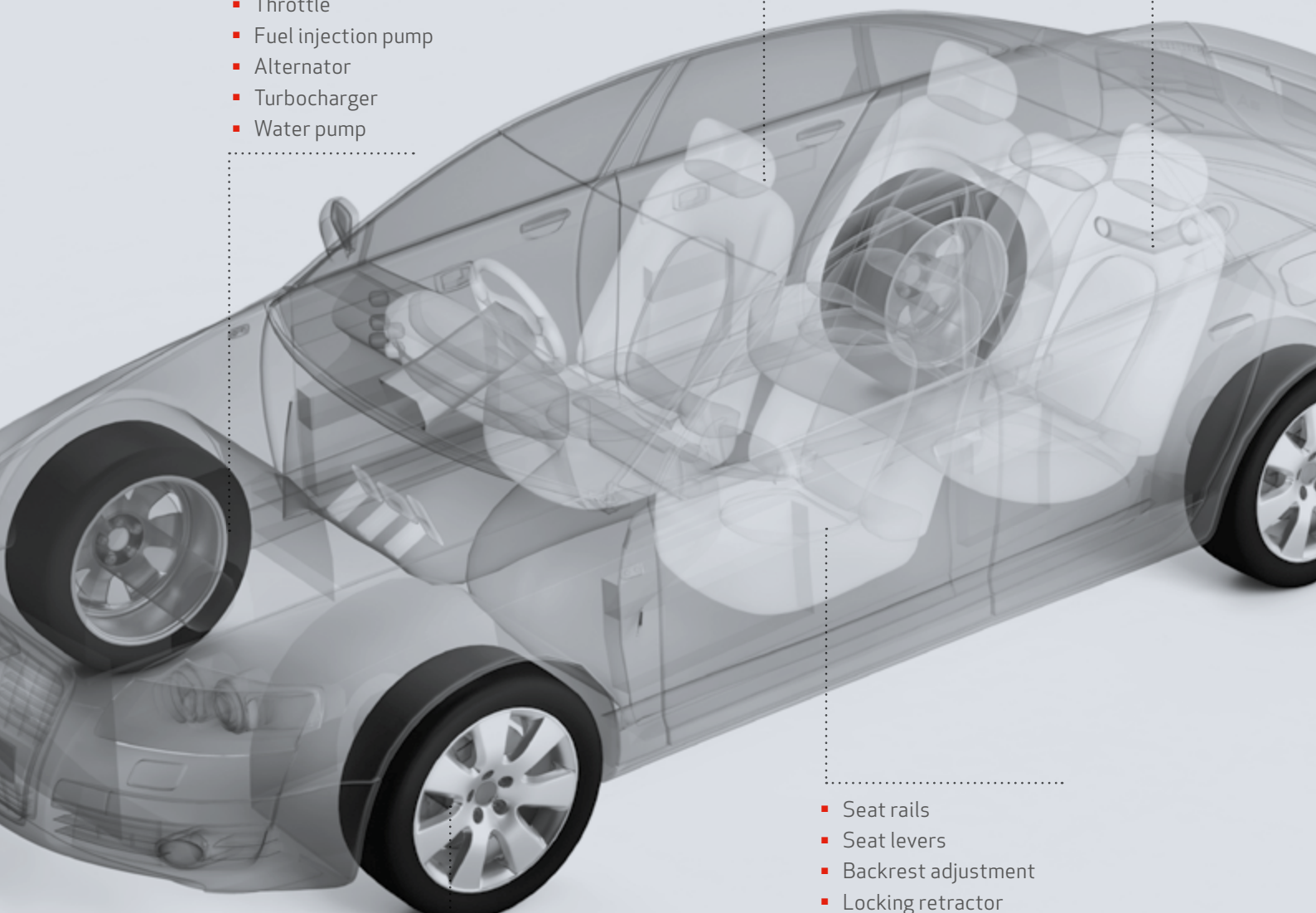
A MEMBER OF THE  
**HILGER&KERN** GROUP

## lubriLine

SOLUTIONS FOR THE METERING  
AND DISPENSING OF LUBRICANTS



lubriLine



- Battery terminal
- Air conditioning
- Air vents
- Sunroof

- Interior parts
- Cup holder
- Centre arm rest
- Storage compartments
- Switch systems
- Sun visor
- Glovebox

- Starter, start-stop button
- Throttle
- Fuel injection pump
- Alternator
- Turbocharger
- Water pump

- Seat rails
- Seat levers
- Backrest adjustment
- Locking retractor
- Headrest guide

- Double-mass flywheels
- Wheel bearings
- Suspension system
- Shock absorbers
- Sealing
- Steering system
- U-joints
- Drive shaft
- Belt tensioner pulleys

# High precision application of lubricants

## Every task has a perfect solution

Typically, the production of a single vehicle will involve over 150 grease and oil applications. Depending on the specific car model, there can be even more. The purpose of lubrication is the reduction of friction, noise prevention, component durability and the general smooth running of a vehicle. Each application carries a unique set of parameters and so the designing of a metering system always needs to take numerous factors into account. For example, is the material being applied in a dot, bead or spray form? What is the available time frame for the application? How will the metering system be integrated into the production line? In order to match the specified criteria in each and every case, the following key factors must be carefully analysed and incorporated into the system design:

- Material properties
- Process description
- Temperature
- Control and documentation requirements

### Complete and customised solutions from a single provider

A metering system usually consists of three main parts: material feeding, metering and dispensing, and monitoring and control. Depending on the parameters of each case, a metering unit can take various forms: for example, it could be a 1K metering system consisting of multiple components and a dispensing valve or it could be a system with metering valves.

The lubriLine is a selection of products developed by DOPAG to address the specific challenges and needs faced by the automotive industry production. The prime area of use of these products is in highly automated and accurate greasing and oiling processes. Owing to the modular structure of lubriLine, we are able to engineer solutions that are tailored exactly to the parameters of every application. With a wide selection of material feeding systems, valves and process monitoring systems,

DOPAG provides everything you need for a smooth and precise fluid metering.

The development of metering systems for lubrication belongs to DOPAG's core areas of expertise since 1976. This places us among the oldest manufacturers on the market, while allowing us to draw on decades' worth of experience. As of 2019, we have worked with more than 160 material manufacturers, having tested over 2,000 materials.

Engineers at the DOPAG Competence Center in Cham (Switzerland) keep exploring the boundaries of metering technology and its applications. Additionally, they have a DOPAG technical center to their disposal, where they test materials and applications during the system conception stage. With eleven subsidiaries and plentiful distributors worldwide, our customers have access to the DOPAG network in more than 40 countries, enjoying the full benefit of excellent local sales and services.

## Your project plan

- Customer makes an enquiry
- Enquiry is processed by DOPAG (application form, datasheets, sketch)
- Feasibility study, first layout design, possibly testing in the technical centre
- Budget quotation is made
- Customer reviews budget quotation
- Further testing in collaboration with customer
- Fixed quotation is made
- Customer places an order
- Project engineering / elaboration of detailed configuration
- Production
- Delivery and commissioning

# Products for every part of the process

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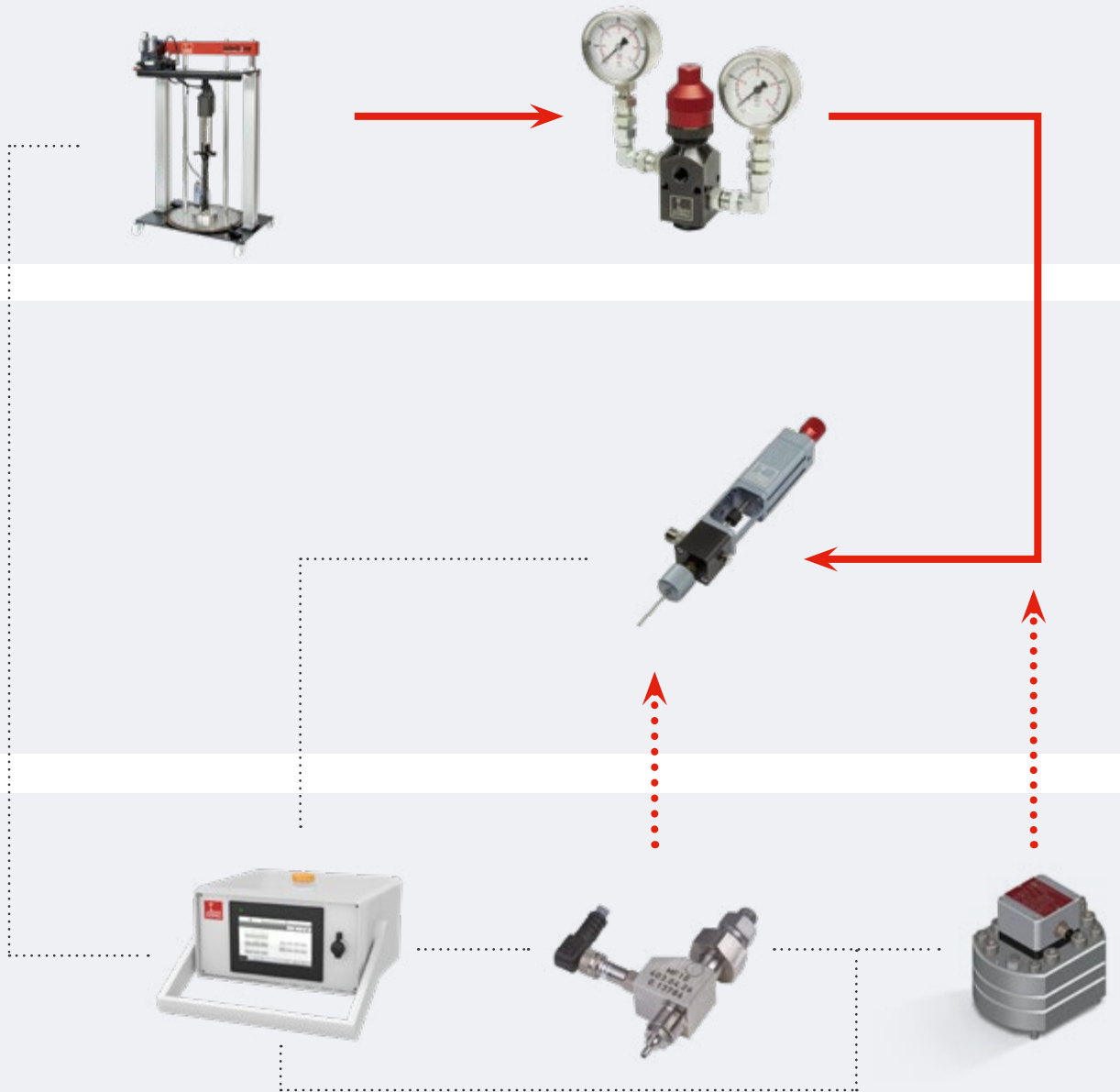


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# Material feeding

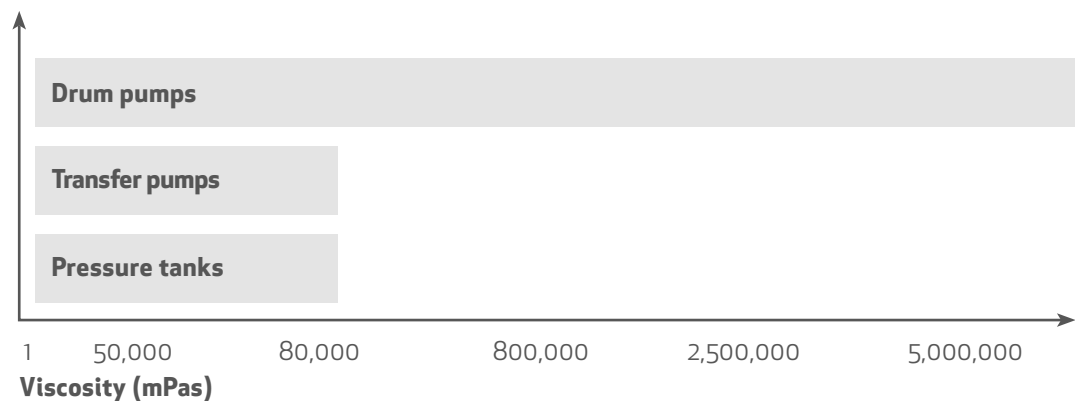
A reliable supply of grease  
and oil



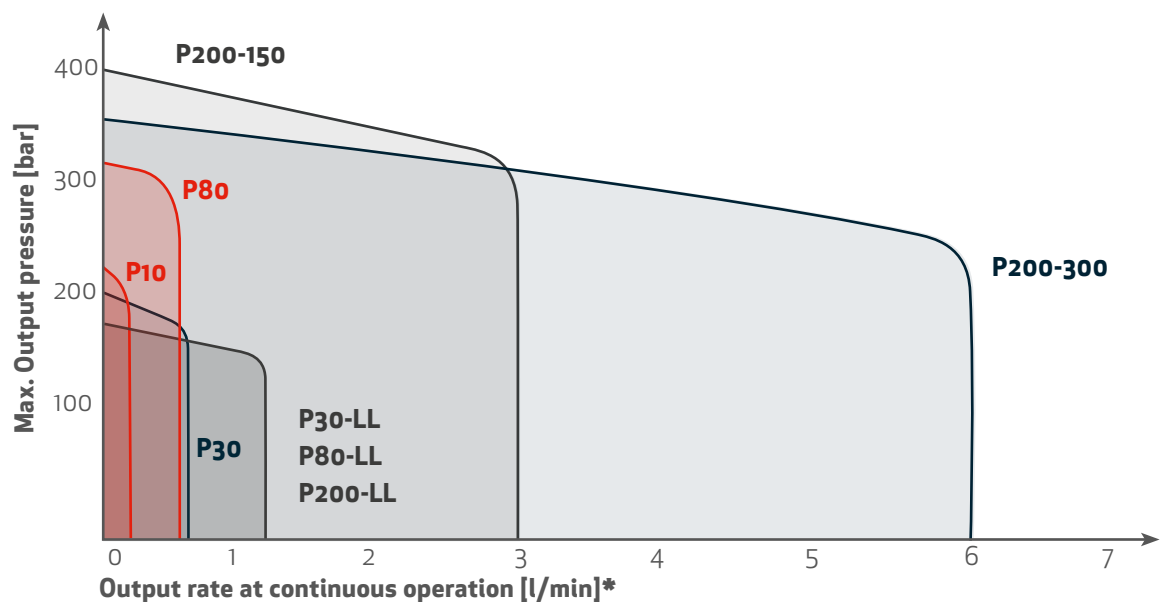


If we want to achieve perfect results with grease and oil metering, it is important that our material be pumped efficiently and without air pockets (air bubbles). An uninterrupted and reliable material supply is absolutely essential to achieve that. With every application, the selection of an optimum feeding system must consider factors such as material properties, process parameters and container size. The DOPAG product portfolio offers an extensive range of solutions for fluid metering, including drum pumps, transfer pumps and pressure tanks. All DOPAG feeding systems rely on the proven technology of piston or gear pumps. Moreover, thanks to their modular design, they can be individually configured to match the application and material specifics.

#### Viscosity ranges of feeds



#### Working ranges of drum and barrel pumps



\*Short-term increases are possible

# Drum pumps

## An efficient supply of lubricants

DOPAG has developed a special range of drum pumps for the processing of lubricants. The lubriLine pump range features double-acting ball valve and piston pumps that deliver greases and oils of consistency class NLGI 0 - 3. Material is fed directly from original containers. LubriLine grease pumps are an ideal

option either as central material supply systems or as single feed stations. While their modularity, robustness and low maintenance requirements make them a valuable addition to any dispensing set up, they are also highly economical, leaving only minimum amounts of material residue in the container.



### Product features

- Supply of low to medium viscosity materials
- Flow rate up to 1.2 litres/minute at 40 double strokes
- Pressure ratio up to 30:1
- Compatible with lubricants of NLGI class 0 – 3
- Differential piston pumps with fast-switching air motors
- 1- or 2-hand operation
- Modular design with configurable components



# High performance piston pumps



This drum pump model is available exclusively as a double-acting chop check pump. Along with greases and oils, it also processes adhesives, sealants, polyurethanes or silicones with viscosities of up to 5.0 million mPas. Material is fed directly from the original

containers. The piston pump is ideal for individual station material supply and it serves equally well as a central material supply system. The pumps in this range are modular, robust, economical, extremely reliable and easy to maintain and service.



## Product features

- Supply of medium to high viscosity material
- Flow rate up to 6 litres/minute at 20 double strokes
- Pressure ratio up to 75:1
- Max. viscosity 5 million mPas
- Differential piston pumps with fast-switching air motors
- 1- or 2-hand operation
- Modular design with configurable components
- Sealing available in various sizes and material finishes

# Tandem pumps

Many applications require an uninterrupted material feed maintained at all times. For such cases, all DOPAG pump models are available as a tandem version. Tandem pumps feature an automatic mechanism that switches between the pumps whenever material level is low, so that container change can proceed without

interruption and time pressure. With clean handling and minimal material residue left in the drum, DOPAG pumps have earned their place in the most efficient production lines around the world. All sizes are available as tandem versions.



## Pump configuration with the ID Generator

Thanks to the modular design of DOPAG drum pumps, customers can combine various modules and features to create a product that perfectly matches their needs. To make this a simple process, we have developed an ID Generator tool, which allows you to configure your pump in a single step and receive its identification code instantly. Using the code, you will be able to order your new pump directly or request a quotation. All you need to know to use the tool are the material properties, drum/ container dimensions and the features you want your new pump to have.



Scan the QR code to create a pump ID or access our ID Generator tool online at: [www.dopag.com/id-generator](http://www.dopag.com/id-generator)



# Transfer pumps for direct supply from original containers



Depending on the application type, it may be useful to be able to supply material directly from the original containers using a transfer pump. DOPAG transfer pumps are double-acting pumps with a fast-switching air motor. It should be

noted that the use of transfer pumps is always dependent on the material properties and the container type.



## Product features

- Low viscosity material feeding via bung hole
- Flow rate up to 1.0/6.0 litres/minute at 20 double strokes
- Pressure ratio up to 21:1/36:1
- Max. viscosity 80,000 mPas
- Sealing available in various sizes and material finishes

# Pressure tanks

## Thin fluids delivered effortlessly

Low-viscosity media such as oils can be delivered to the point of application directly from pressure tanks by means of compressed air. The tanks can serve either as buffer storage within a metering system or as the main system supply. They are available in various sizes and with options, to accommodate

different application requirements. With visual level indicators and electric level sensors, you will always be aware how much material is left in the tank. Alternatively, DOPAG pressure tanks are also available with mounting fixtures.



### Product features

- For low viscosity media such as paint, oils and preservatives
- Modular construction
- Input pressure max. 6 bar
- Bottom outlet with ball valve
- Max. viscosity 80,000 mPas

### Options

- Air maintenance device
- Material filter on outlet
- Agitator
- Fill level sensors
- Heating sleeve
- Gauge glass

# Material pressure regulators

## Pulsation-free dispensing with the correct pressure

DOPAG material pressure regulators reduce the pressure of the pumped material down to the optimum working value. They are designed specifically for the precise dosing of greases, oils and silicones. Along with reducing pressure, the valves also compensate for pulsations that occur when material is delivered via piston pumps, more specifically in the moment of the changeover position of the pump. This problem

manifests itself in fluctuations in material pressure and flow, and can lead to reduced product quality – particularly in cases of very small doses, continuous or spray applications. The material pressure regulator is a guarantee of a perfectly stable material flow. For abrasive or reactive material, we recommend our material pressure regulator with a diaphragm.



### Product features

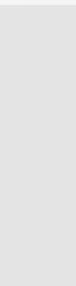
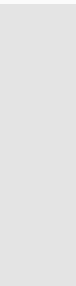
- Pressure reduction and minimisation of pulsations
- Internal diameter of standard sizes: 4, 8 and 12 mm
- Max. input pressure 250/400 bar
- Max. pressure reduction 1:5
- Outlet pressure depending on model
- Integrated material filter 30 mesh
- Version with diaphragm available for more challenging applications

### Options

- Pressure gauge
- Heating
- Spare filter in different mesh sizes
- Fixing bracket
- Safety cap

# Metering and dispensing

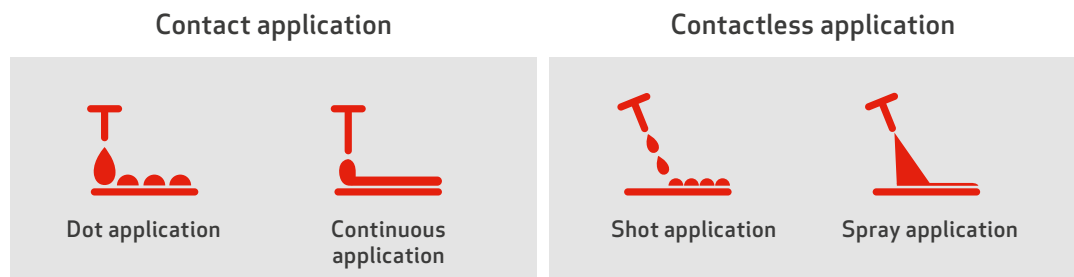
As precise as you need



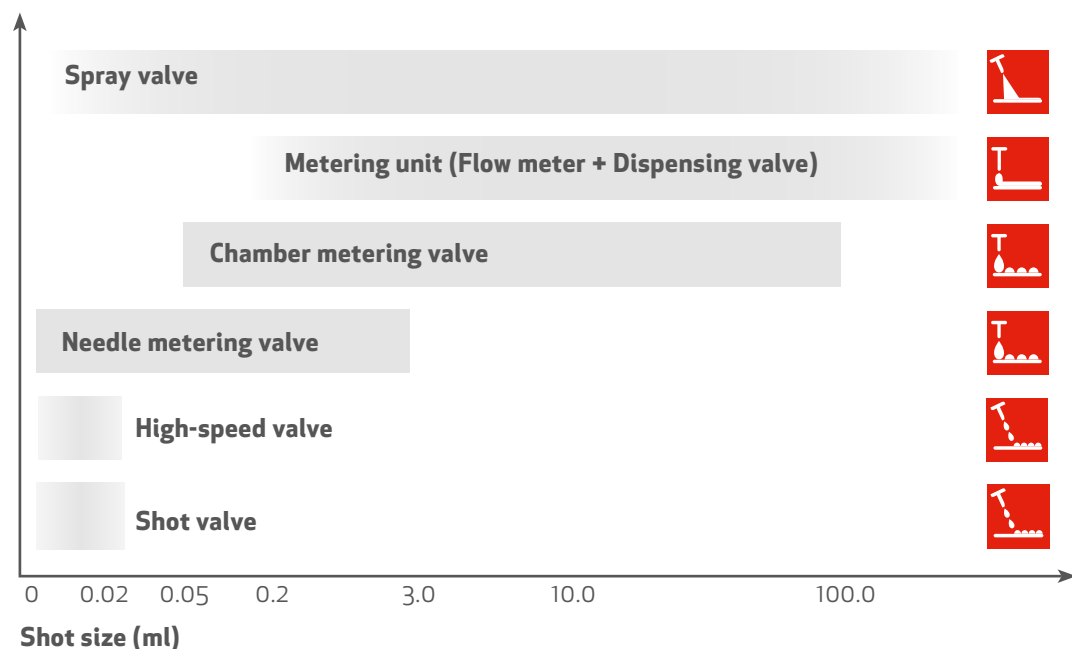


Metering and dispensing valves from DOPAG demonstrate all the qualities that are essential for optimum results in metering: high precision, excellent reproducibility and high quality standards. The DOPAG range includes various valve types, all of which are based on one of two dispensing principles. The needle and chamber metering valves work on the volumetric principle (dot application). Here, each cycle means that the contents of the valve chamber are completely emptied upon a trigger signal. This has the advantage of high repetition accuracy and flexibility thanks to the possibility of volume adjustment. On the other hand, dispensing, spray and shot valves work on a different principle, where the discharged quantity is defined by material pressure and valve needle opening time. This allows for application of small quantities from a distance, as well as continuous applications of any material amount.

Order types



Shot ranges of metering technologies

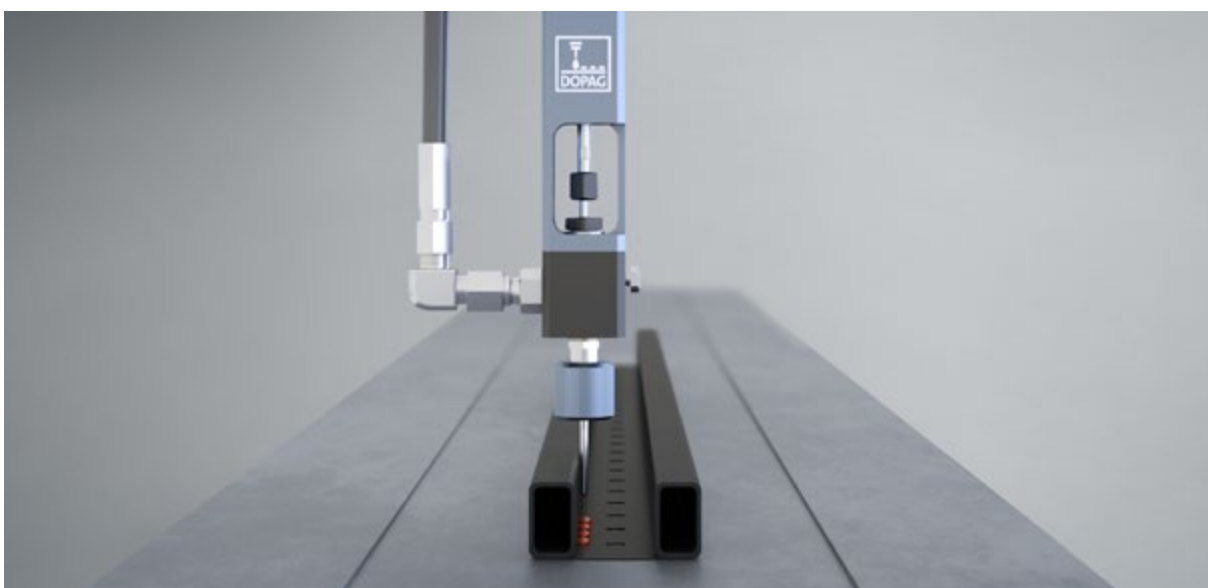


# Needle metering valves

## Greater accuracy for small dot size

Needle metering valves are suitable for dot application of low to high viscosity media. With this series, very small quantities of up to 3ml per shot can be discharged with high reproducibility and short cycle times. The valve consists of two structurally separate parts, meaning that material cannot leak into the drive cylinder and interfere with the movement of the valve needle. This feature makes the needle metering valve an exceptionally reliable and low-maintenance piece

of metering equipment. Shot size is determined by the volume of the valve chamber, which can be adjusted within a predetermined range using a stop screw. The metering cycle can be controlled either pneumatically or electrically via a solenoid valve. DOPAG needle metering valves are perfectly suitable for manual applications with a handle as well as for fully automated processes.



### Product features

- Dot application (volumetric dispensing)
- Shot size 0.001 – 3.00 ml (depending on model)
- Material input pressure 3 – 50 bar
- Compatible with stroke detection (see p. 29)
- Sealing available in various sizes and material finishes

### Options

- Solenoid valve plate 24 V
- Signal generator with various cables
- Various adapters and needle tips
- Micro-flow sensor (see p. 28)
- Pneumatic or electric handle



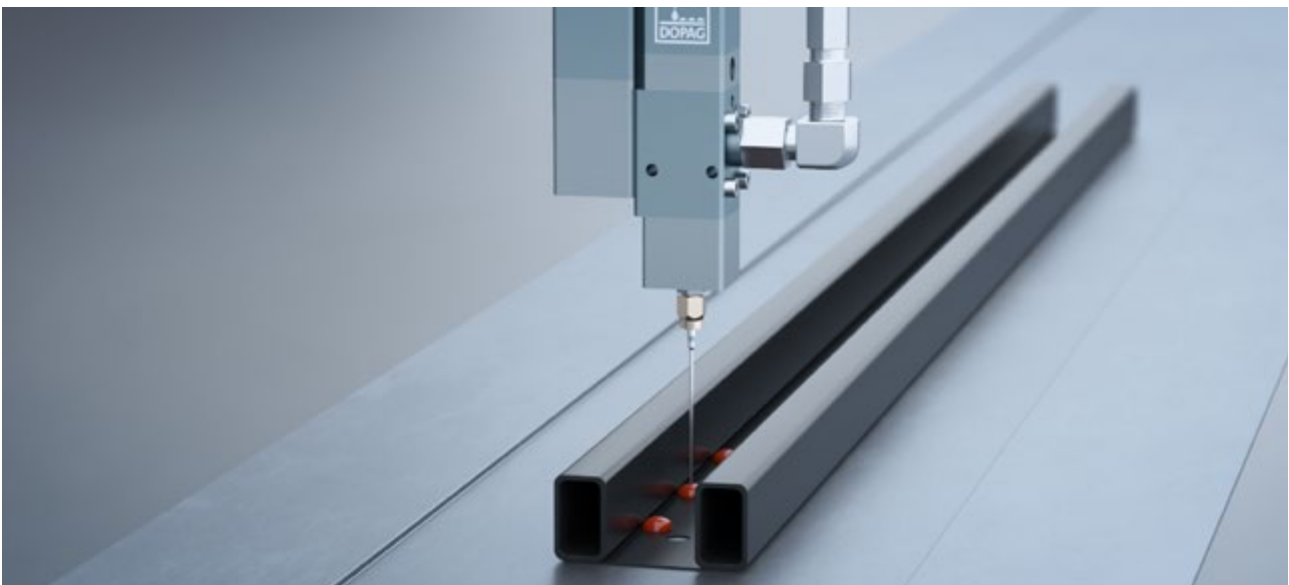
# Chamber metering valves

## Process stability and shot size flexibility



Chamber metering valves are used for dot application of low to high viscosity media. Compared to the needle metering valve, they offer a larger range of shot sizes. Thanks to an innovative design that features a 'snuff back' effect, these valves are characteristic for their high process stability and drip-free application when dispensing low-viscosity media. The shot size is determined by the chamber volume, which can

be adjusted within a predetermined range using a stop screw. The metering cycle is controlled either pneumatically or electrically via a solenoid valve. This valve series allows a highly repeatable metering of small quantities up to 100 ml within short cycle times. Manual application with a handle is just as possible as the integration into a fully automated process.



### Product features

- Dot application (volumetric metering)
- Shot size 0.05 – 100.00 ml (depending on model)
- Material input pressure 40 – 80 bar
- Compatible with stroke detection (see p. 29)
- Snuff-back effect

### Options

- Solenoid valve plate 24 V
- Signal generator with various cables
- Various adapters and needle tips
- Pneumatic or electric handle

# Handheld metering valves

## Manual dispensing of lubricants

Based on the design of the tried and tested lubriLine metering valves, DOPAG has developed vertical handheld metering valves for manual use. The valves are available in three different versions and are suitable for all applications requiring a highly accurate and clean manual application of grease or oil. Even hard to reach areas are very easy to access with them. Moreover, their user-friendly design will come handy at any

manual workplace relying on simple and quick handling.

The handheld metering valves are built for volumetric, dot application of material. They are the perfect choice for applications where high repeatability is important. However, if the requirement is for continuous dispensing instead, then we recommend using our handheld dispensing valves.



### Features

- Available in the following versions:
  - 0.003 – 0.2 ml (based on needle metering valve)
  - 0.05 – 0.5 ml (based on chamber metering valve)
  - 0.1 – 3 ml (based on chamber metering valve)
- Only available as a complete assembly
- Pneumatic or electronic version
- For vertical mounting on a balancer or similar
- Ergonomic handle

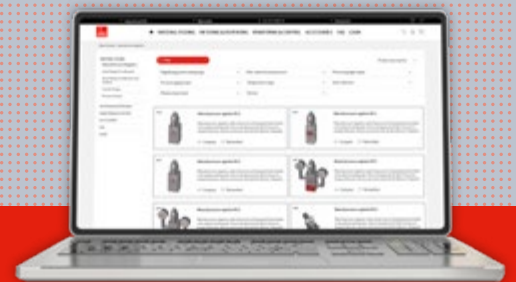


# DOPAG Product portal

**Pumps, valves and equipment for  
your metering system**

**Benefit from the DOPAG product portal:**

- Filter function for product selection
- Compare products directly
- Step files
- Technical data
- Service literatures
- Operating manuals
- Dimension sheets



**Select, compare and  
request now!**

**Start now:  
[productportal.dopag.com](http://productportal.dopag.com)**

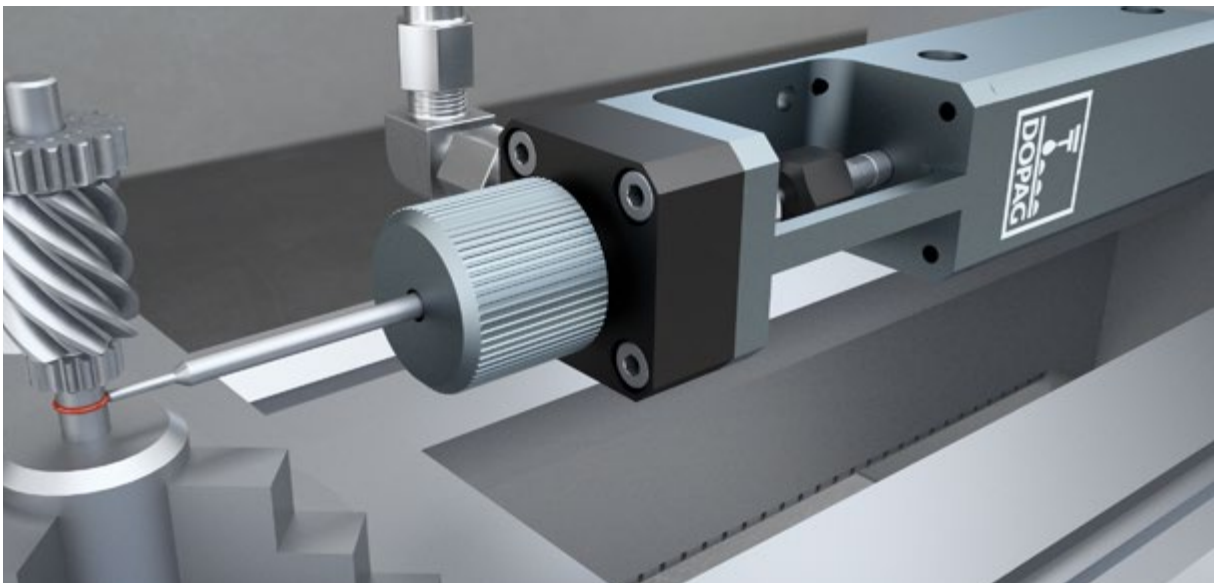


# Needle dispensing valves

## Continuous dispensing with great flexibility

Based on the time-pressure dispensing principle, the needle dispensing valves are most effective in continuous applications of low to high viscosity media. Consisting of two structurally separate parts, they have the advantage that material cannot leak into the drive cylinder and interfere with the valve needle

movement. The size of the orifice is regulated by stroke adjustment. A special, adjustable seal closes the valve needle off from the valve head, ensuring a perfectly clean and precise application of every single shot. The material passageway can be flushed as and when necessary.



### Product features

- Continuous application (time-pressure dispensing)
- Internal diameter 1, 2.5, 6 and 12 mm
- Max. input pressure 250 bar
- Compatible with stroke detection (see p. 29)
- Sealing available in various sizes and material finishes

### Options

- Solenoid valve plate 24 V
- Signal generator with various cables
- Various adapters and needle tips
- Pneumatic or electric handle



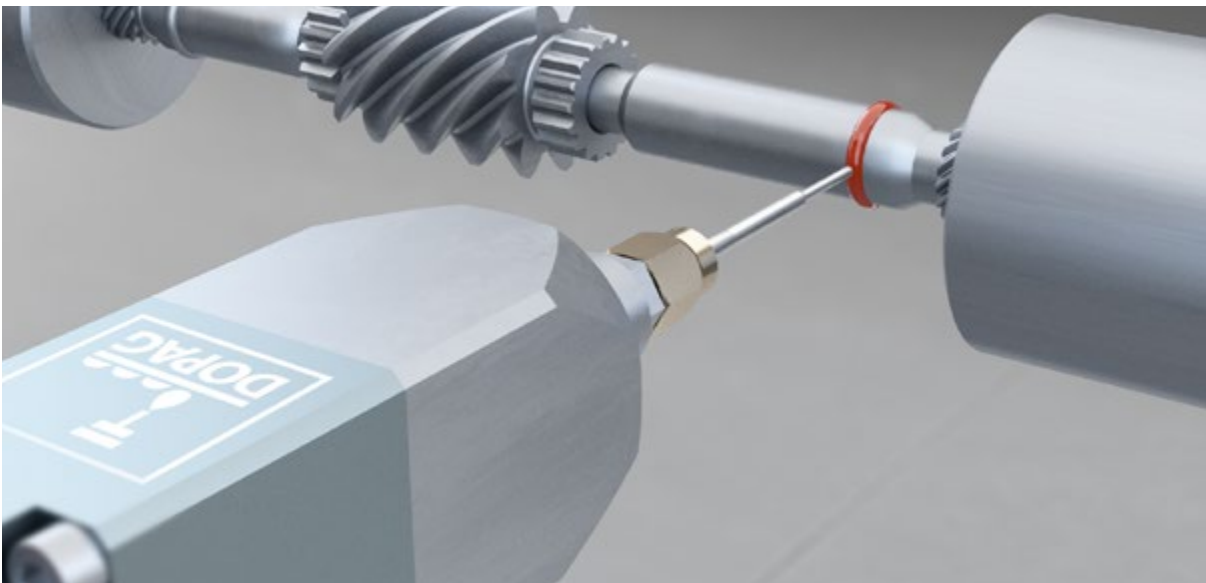
# Diaphragm dispensing valves

## Clever solutions to the greatest challenges



The advantage of diaphragm dispensing valves is their ability to process material with challenging properties in continuous shot applications. The valves are designed for care-free dispensing of low to high viscosity, filled or unfilled, abrasive or chemically reactive 1K fluids. Part of their structure is an integrated diaphragm that separates the pneumatic and the metering parts of the

valve. As a result, only the valve head and the diaphragm come in contact with the material, while the material passageway can be easily flushed if necessary. The size of the orifice is regulated by stroke adjustment. Material dripping after shot completion is effectively prevented by the snuff-back mechanism. This valve is exceptionally easy on maintenance.



### Product features

- Continuous application (time-pressure dispensing)
- Internal diameter 2, 4 and 8 mm
- Max. input pressure 160 bar
- Snuff-back effect

### Options

- Solenoid valve plate 24 V
- Various adapters and needle tips
- Pneumatic or electric handle
- Heated valve with or without plug 230 V AC / 200W

# Handheld dispensing valves

## For manual dispensing of grease and oil

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The handheld dispensing valve draws on the tried and tested dispensing valves made by DOPAG. Having been developed specifically for use in manual applications, the handheld dispensing valve is an excellent performer in applications where grease or oil are dispensed continuously by hand. The shot volume is regulated by adjusting the valve opening time and material pressure.

Additional components for measurement and control are available. The handheld dispensing valve is mounted vertically and allows access even to hard to reach areas. Due to its user-friendly design, the handling is simple and quick. For volumetric dispensing and dot application DOPAG recommends the handheld metering valve.



### Product features

- Type: LW2.5 (based on the dispensing valve)
- Only available as a complete assembly
- Pneumatic or electronic version
- For vertical mounting on a balancer or similar
- Ergonomic handle



# Rotary applicator

## Contactless 360° greasing of holes



The rotary applicator was specially developed for 360° greasing or oiling of holes. For rotary lubrication, the applicator is attached to the SHV-01 shot valve from DOPAG. The material is applied shot by shot and contactless. The patented rotary applicator offers a high flexibility and various applications, as a wide range

of different diameters can be covered. The amount of the material can be variably adjusted. A wide range of rotation speed ensures an ideal material distribution. The valve seat closes completely, so there will be no material dripping. Overspray will be avoided. Further, self cleaning with a special spinning function is included.



### Product features

- Rotary lubrication with the shot valve
- 360° lubrication of bores and contours
- Different centrifuge sizes
- Max. shot frequency of 200 Hz (SHV-01)
- Max. rotation speed approx. 15.000 rev/min
- Bore diameter approx. 15 – 200 mm\*
- Immersion depth approx. 0 – 200 mm\*

\*Different areas of application according to customer requirements possible.

### Options

- 24 V / 50 W heating with temperature sensor PT100
- Silencer kit
- Light barrier for shot detection
- Stroke detection device with cable

# Progressive cavity pumps

## Continuous metering with the highest accuracy

The progressive cavity 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 45 ml/min
- Speed of 0 to 150 rev/min
- Maximum input pressure of 6 bar
- Maximum operating pressure of 10 bar
- Ideally suitable for all viscosities from highly fluid to pasty
- Snuff-back function

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  $\pm 1\%$  and better.

## Options

- Cartridge supply 10cc / 30cc / 55cc
- Pressure regulator and level control for cartridge supply
- Spray adaptor
- Servo controller
- Various needle tips

## Technical Specifications

Size [ml/rev]	Output rate* [ml/min]	Min. metering volume** [ml]	Speed range [rev/min]	Pwork [bar]	Pmax [bar]	Metering accuracy [%]
<b>0.01</b>	0.13 – 1.95	0.002				
<b>0.05</b>	0.59 – 8.85	0.008	0 – 150	6	10	$\pm 1$
<b>0.15</b>	1.63 – 24.5	0.01				
<b>0.30</b>	3.0 – 45.0	0.03				

\* At speed range 10–150 rev/min

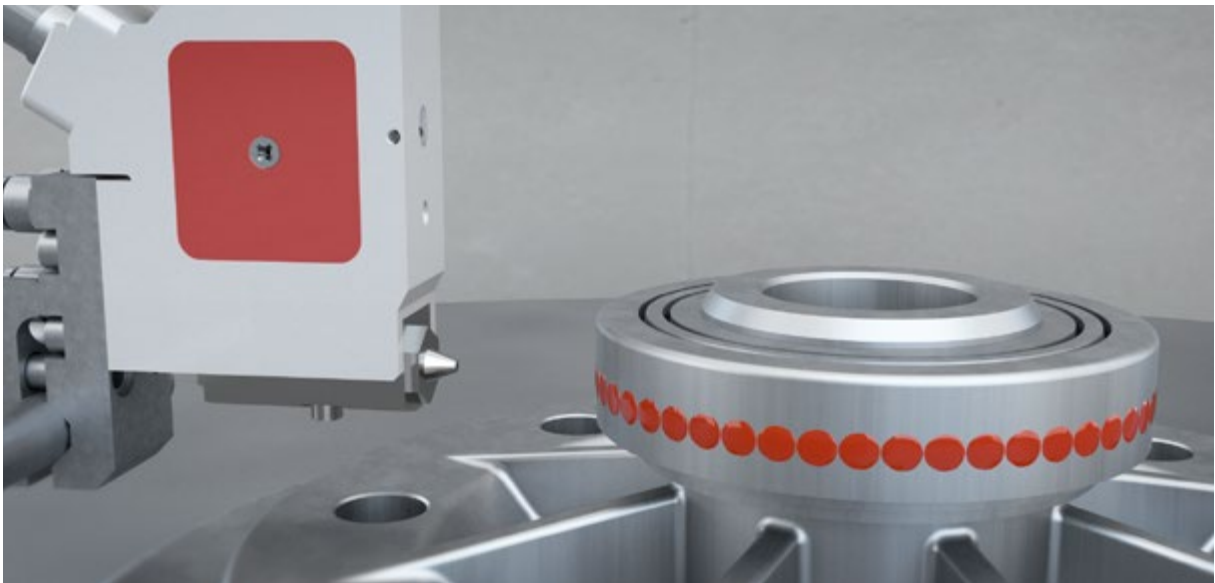
\*\* Depending on material properties, nozzle size, alignment of pump, etc.

# High-speed valves

## Contactless greasing in automated processes

The high-speed valve is used in contactless (from a distance) applications of grease and oil where stringing must be avoided. The compact design of the valve enables an effortless and effective greasing of narrow and hard-to-reach spaces. The dot application takes place in the longitudinal direction of the nozzle with a perfect material cut off after each shot. With short

cycle times, this valve is ideal for integration into highly efficient processes. Thanks to an innovative nozzle with a self-cleaning effect and an integrated filter, the high-speed valve delivers a perfectly clean application every time. An integrated heating element keeps the material properties at their optimum, ensuring high process stability and reproducibility.



### Product features

- Shot application
- Nozzle size  $\varnothing$  0.21 – 0.81 mm
- Input pressure max. 70 bar
- 24V DC solenoid valve for maximum shot frequency of 100 Hz
- Integrated 230 V AC / 155 W heating with a temperature sensor PT100

### Options

- 5m cable for heating
- Light barrier for shot detection (see p. 34)

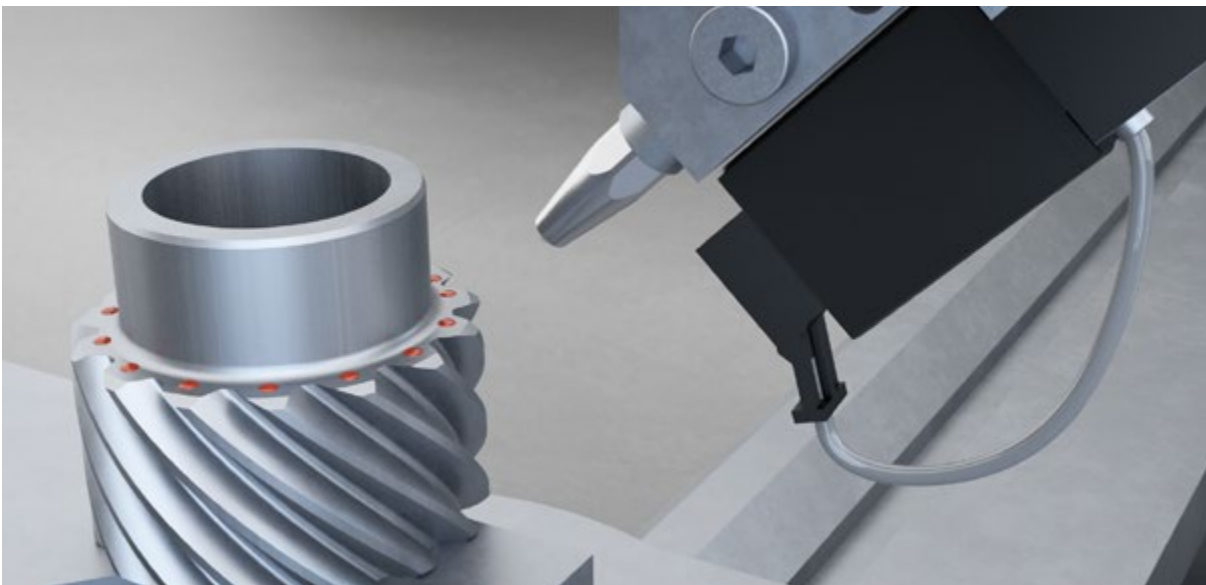


# Shot valves

## Lubrication of hard-to-reach places in automated processes

Shot valves are extremely fast-switching valves designed for the application of grease and oil from distance (contactless) in automated processes. They are capable of dispensing the smallest amounts of material at the speed of up to 200 cycles per second. This is possible thanks to the integrated 5/2 way

solenoid valve (also used for control), together with short paths in the entire air supply system. The valves are available with both short and long nozzles, which enables them to cover various angles of application. Depending on the nozzle size, media with different viscosities can be processed easily.



### Product features

- Shot application
- Nozzle size  $\varnothing$  0.2 – 1.0 mm
- Input pressure max. 100 bar
- 24 V DC solenoid valve for maximum shot frequency 200 Hz SHV-01 / 30 Hz SHV-02
- Adjustable needle rise (raster regulation)

### Options

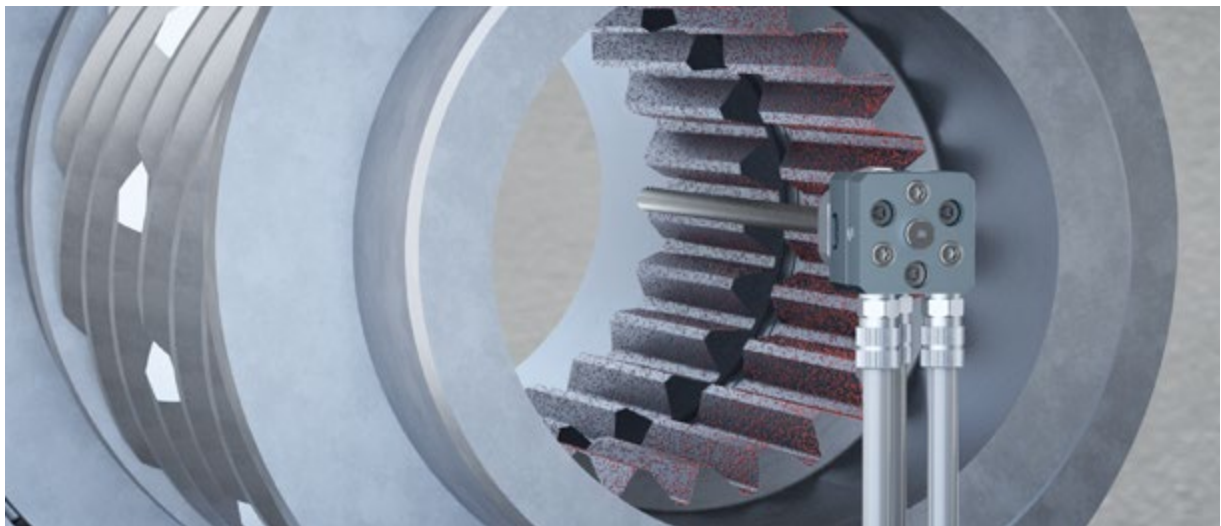
- Stroke detection device with cable (see p. 35)
- Nozzle extensions with various lengths and shot angles
- 24 V / 50 W heating with temperature sensor PT100
- Pressure sensor (see p.35)
- Light barrier for shot detection (see p. 34)
- Rotary applicator

# Spray valves

## Full surface coverage applied from a distance

The spray valve is a special kind of valve designed for full-surface application of greases and oils. It is suitable for both intermittent and continuous material applications. A unique feature of this valve is the integration of a diaphragm, which is used for the adjustment of the air blow duration after each material shot - this serves the cleaning of the nozzle. Short air ways in the body of the

valve and a flange-mounted 5/2 way solenoid valve allow a very fast and accurate intermittent operation. A wide range of available extensions and attachments open up the possibility of spray application in hard-to-access areas, while various aircaps allow the customisation of the spray coating pattern.



### Product features

- Spray application
- Nozzle size  $\varnothing$  0.2 – 1.5 mm
- Material input pressure max. 35 bar
- With 24 V solenoid valve (SPV-01) / Compact construction without solenoid valve (SPV-02)

### Options

- Stroke detection with cable (see p. 35)
- Various nozzle extensions with different spray cones and angles
- 24 V/ 50 W heating with temperature sensor PT100
- Pressure sensor (see p. 35)

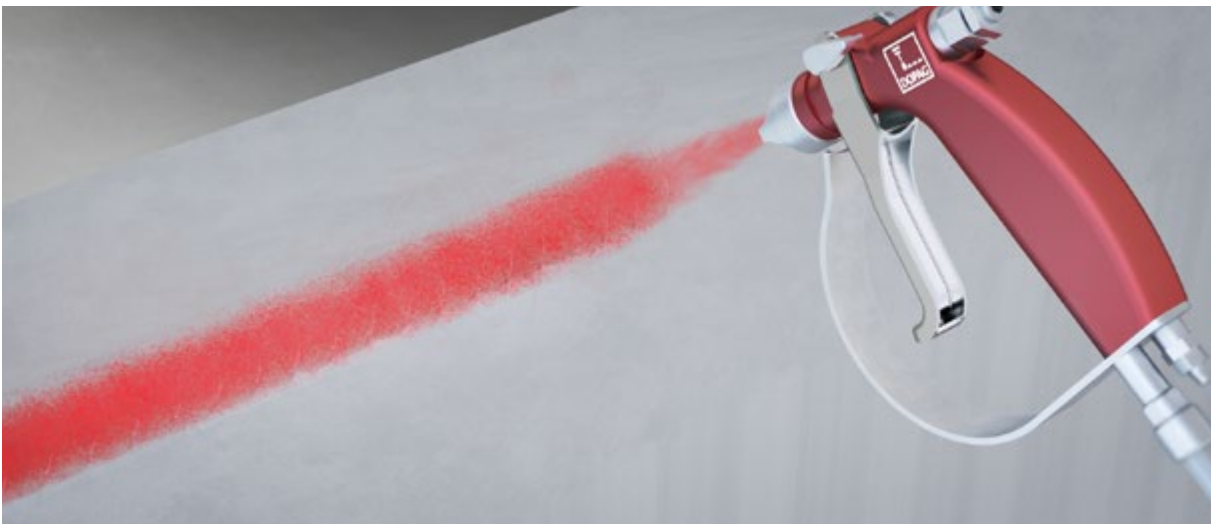
# Spray guns

## A perfectly clean application by hand



In cases, where manual, full-surface application of greases and oils is required, DOPAG offers a spray gun. The spray gun can process oils without fillers in the viscosity range of up to approx. 100,000 mPas, as well as unfilled greases of consistency class NLGI

0–3. A variety of nozzle sizes, air caps and extensions offers a high degree of flexibility, allowing the user to apply material reliably even onto hard-to-reach areas. Lastly, the gun is very easy and quick to handle, owing to its user-friendly design.



### Product features

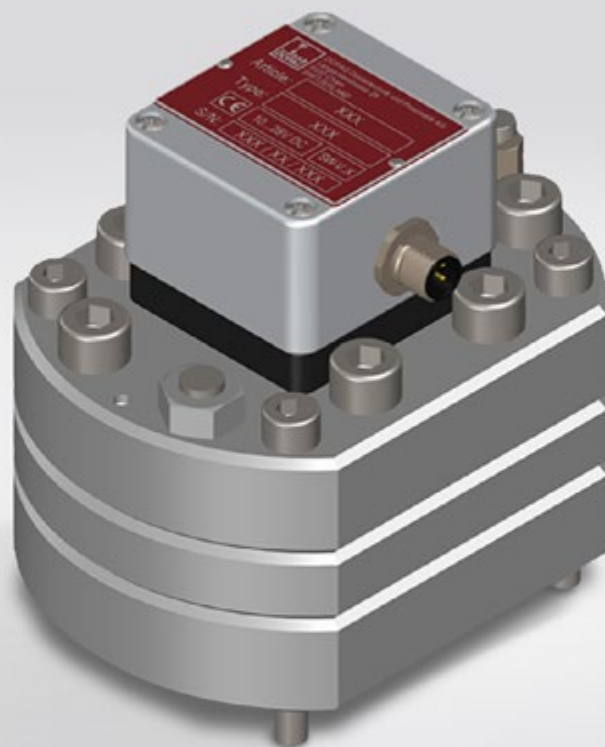
- Manual spray application
- Nozzle size  $\varnothing$  0.2–1.5 mm
- Material input pressure max. 50 bar
- Pneumatic pressure max. 6 bar

### Options

- Various nozzle extensions with different spray cones and angles

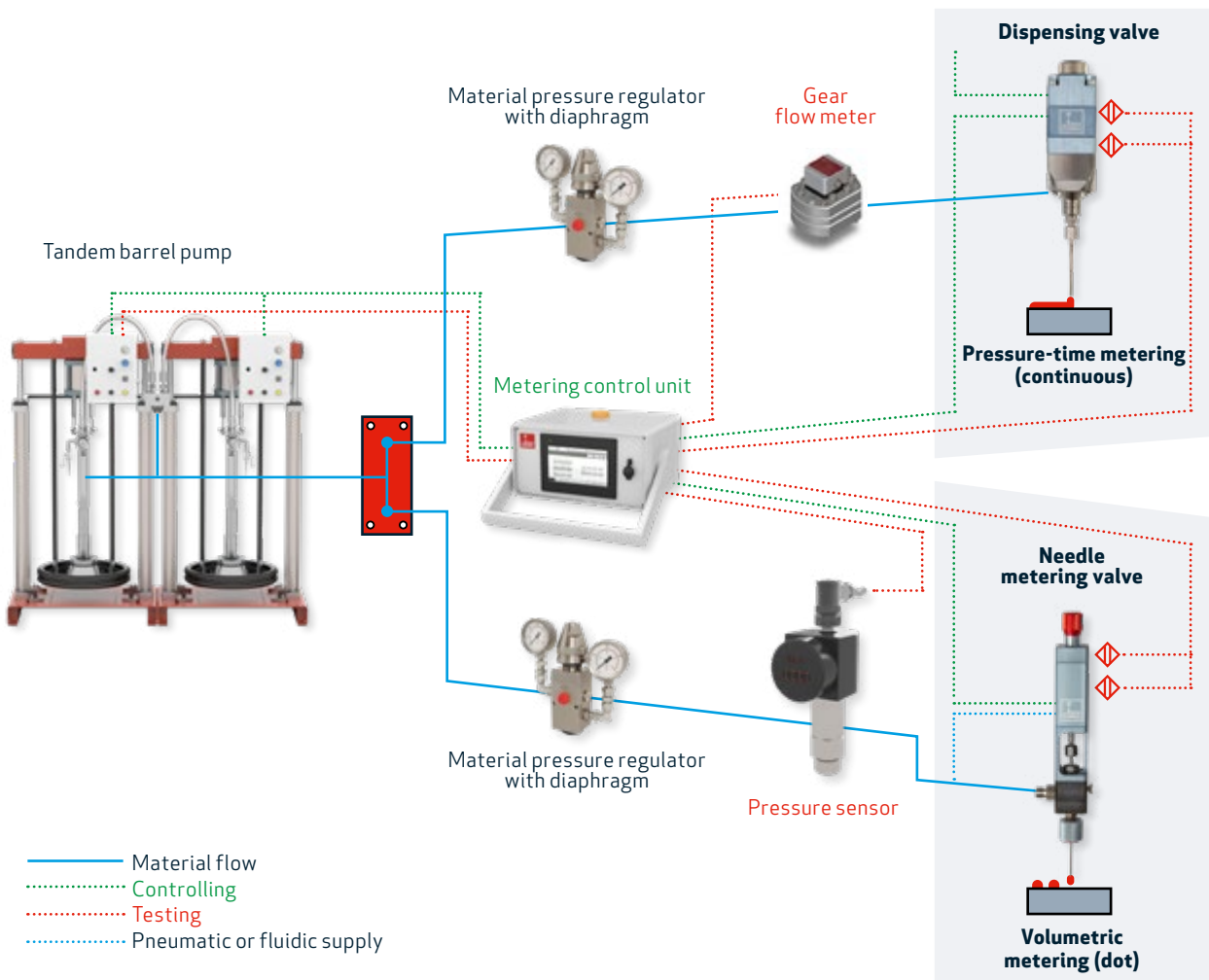
# Monitoring and control

Process-stable and reproducible metering



Metering processes are generally defined by short cycles, high repetition rates and strictly given tolerances. Moreover, the shots being applied are often only minuscule amounts of material, in which case it is all the more important that the metering be reliable, accurate and reproducible. Modern production processes require a detailed monitoring of the process capability and the repeatability of applications. These requirements must be carefully defined right at the start and considered in the system concept design. DOPAG offers a comprehensive portfolio of process monitoring and control technology, including gear flow metering cells, light barriers, pressure sensors and metering control units. System concept designing at DOPAG involves our engineers working closely with the customer to align process control and monitoring mechanisms with the application requirements, and combining them with the appropriate pumps and metering components.

Pressure/time flow chart and volumetric metering



# Gear flow meter

## Precise monitoring and control of the metering process

The gear flow meter has been developed specifically for use in metering and mixing systems. In processes involving one-part media such as greases, oils and adhesives, it is used for measuring the exact material flow rate at any given moment. The measuring principle is based on the volumetric gear displacement system, characteristic for its accuracy and compressive strength. The measuring element comprises of a very

precisely fitted pair of gears placed in the housing of the flow meter. The rotation of the measuring element is detected by a contactless sensor system and converted into digital signals. A metering unit containing a gear-based flow meter combined with a flow-regulating and dispensing valve is ideal for an accurate dispensing or filling of larger quantities of fluids.



### Product features

- Monitoring and control of metering processes
- Adjustable pulse multiplication up to factor 128 for high measuring resolutions
- Status LED
- Tooth volume 0.04 / 0.1 / 0.2 / 0.4 / 1 / 2 cm<sup>3</sup>
- Cast iron, stainless steel or aluminum design
- Plain or ball bearing version available

### Options

- Different connections and adaptors
- Heating
- Connecting cables

# Metering control unit

## Connect and control your metering components

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The MR40 is a control unit developed by DOPAG for the control of complex metering processes. It can be easily integrated into a system with a metering valve or into a 1K metering system with dispensing valves. The control unit enables communication between individual system components and coordinates their operation. Additionally, the featured software allows users to

store numerous metering programmes and to recall and run them later. The control unit is equipped with connection ports for various material supply systems and is compatible with monitoring devices such as the gear flow meter or the light barrier. It can be used either as system control or as an interface between a higher-level system control and a metering system.



### Product features

- Power supply 230 VAC 50 / 60 Hz
- 7" Touch screen control panel
- USB interface for programme updates
- Indicator light with buzzer for error messages

### Options

- Profibus, Profinet or Ethernet IP module
- Different connection and heating cables
- Screen protection foil

### Housing

- Plastic benchtop housing, 370 x 330 x 200 mm with positioning frame
- Sheet metal wall housing 400 x 400 x 210 mm, with fixing brackets

# Micro-flow sensor

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The micro-flow sensor can be used with needle metering valves to confirm that material is being dispensed. It is designed for the detection of very small quantities (0.005 – 3.00 ml). This device is meant purely for material discharge monitoring purposes, not as a means of volumetric measurement.

## Compatible with:

- Needle metering valves (p. 16)



# Light barrier

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The light barrier is a process monitoring device used with the very fast-switching shot and high-speed valves. It counts the number of discharged shots, checking them against the set target quantity.

## Compatible with:

- High-speed valves (p. 26)
- Shot valve SHV-01 (p. 27)





# Stroke detection



The stroke detection device monitors the correct activity of various valve types. Detecting the upstroke movement of the dispensing needle or the metering piston, it sends signals to indicate the proper functioning of a valve.

## Compatible with:

- Needle metering valves (p. 16)
- Chamber metering valves (p. 17)
- Needle dispensing valves (p. 20)
- Shot valves (p. 27)
- Spray valves (p. 28)



# Pressure sensors



Pressure sensors can be firmly mounted on shot and spray valves or they can be positioned further up in the system. They indicate the current material pressure or transmit it over to a monitoring unit.

## Compatible with:

- Shot valves (p. 27)
- Spray valves (p. 28)
- Integration into a system (digital/analogue)



# Accessories

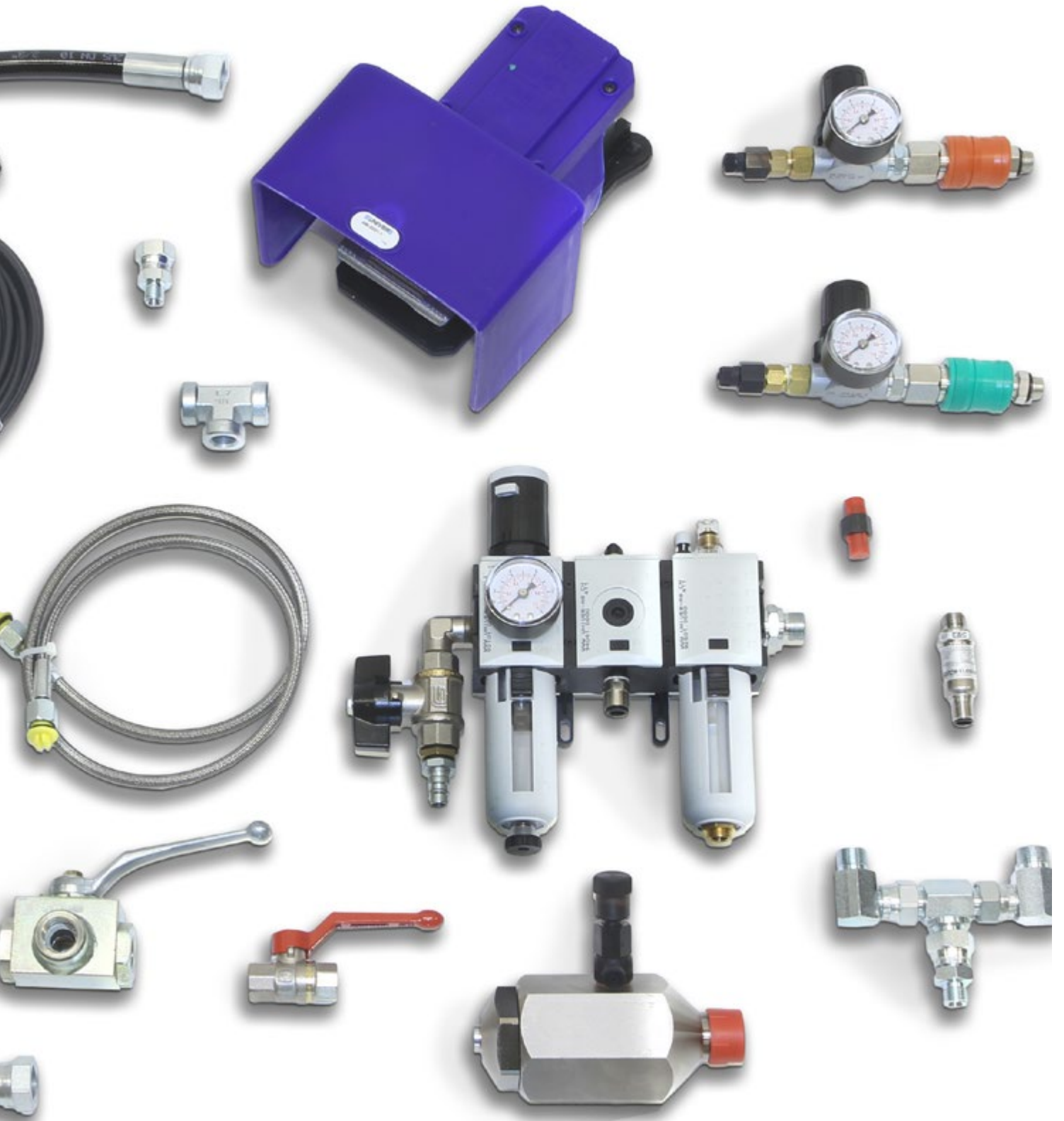
## Everything you need to build a perfect system

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DOPAG pumps and metering components are complemented by an extensive range of accessories to create a complete metering system. Our technicians will be happy to assist you in selecting the right equipment for your needs:

- Multipliers
- Heated hoses
- Pneumatic tubing
- Hydraulic tubing
- Pressure gauges
- Material filters
- Mixer tubes
- Check valves
- Adapters







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 more than 90 years. The group employs around 350 people and has subsidiaries and distributors in more than 40 countries.



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