

DELO

MICRODISPENSING
VALVE
DELO-DOT PN5



DELO-DOT PN5 pneumatic jet valve

Precise, powerful,
perfect handling.

Short cycle times and processes that can be reproduced are important in industrial series production. With high plunger speeds and a dispensing frequency of up to 300 Hz for continuous dispensing, the DELO-DOT PN5 pneumatic jet valve is ideal for complex microdispensing applications.

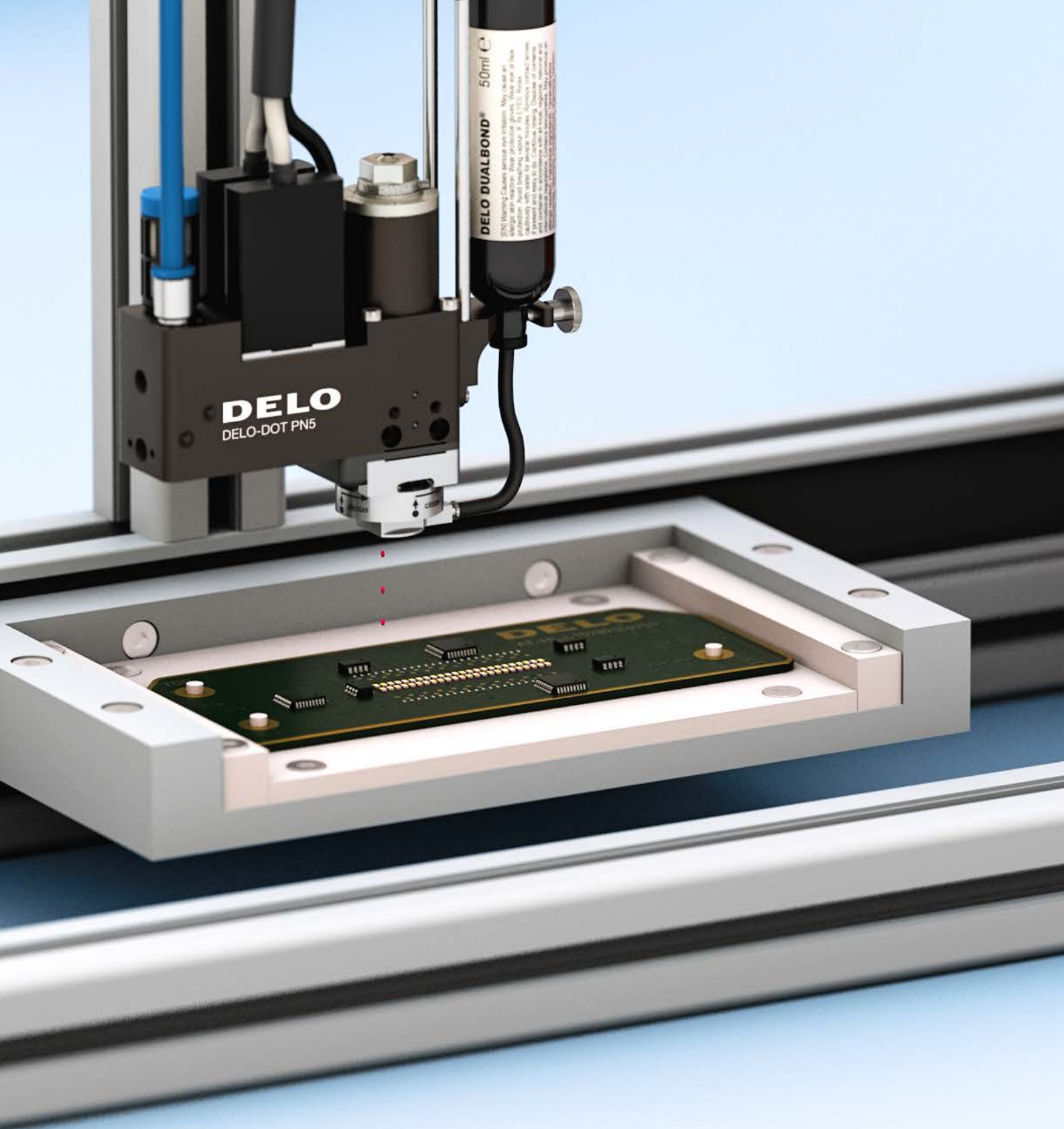
This pneumatic jet valve allows high-viscous materials to be dispensed in tiny droplets both accurately and reliably without any contact. Drop sizes can be varied by using interchangeable nozzles, while the plunger stroke can be adjusted by the user.

The unit's fluid system can be exchanged easily without using any tools, making cleaning quick and hassle-free. The jet valve, and associated control units, can be integrated into almost any production line thanks to its compact and flexible design. With the ability to withstand more than one billion cycles, the DELO-DOT PN5 is ideal for use in the most demanding applications.



Discuss your project and your requirements
with our experts:

equipment-experts@DELO.de



Your benefits at a glance:



› High process reliability through high-precision adhesive dispensing

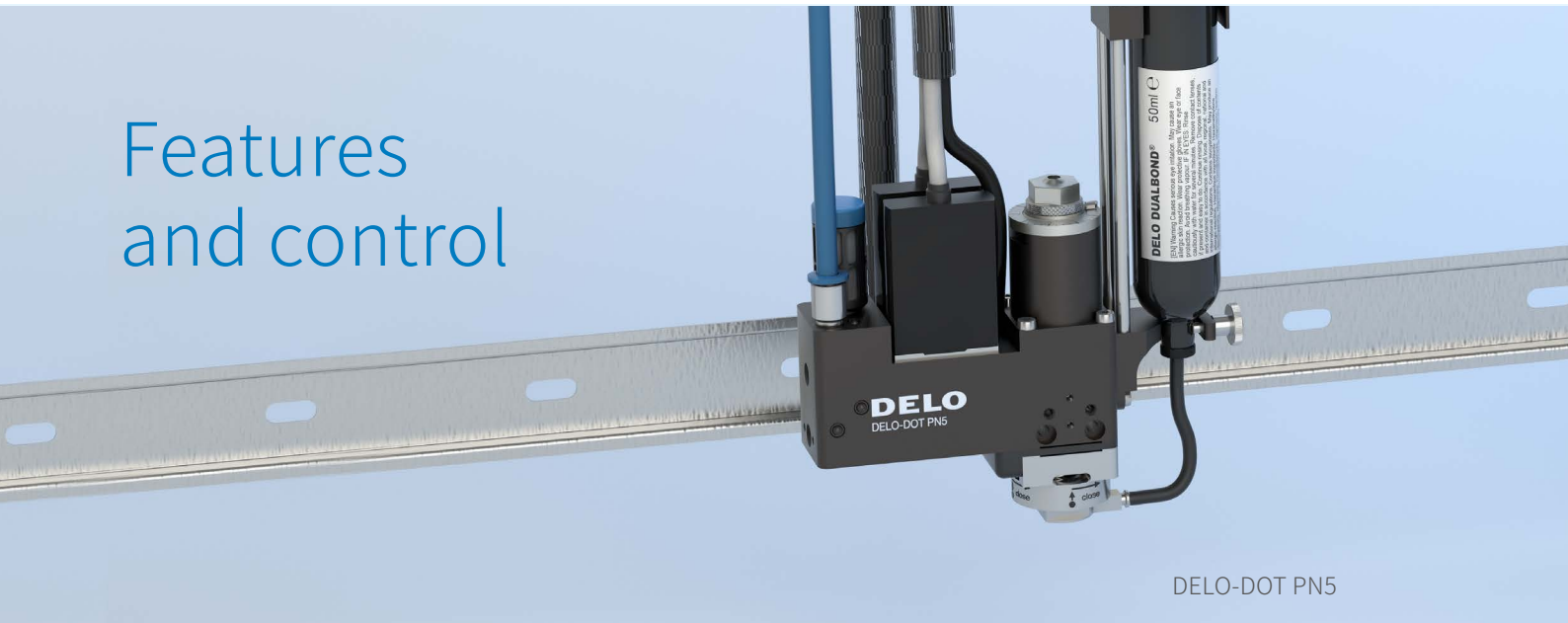


› Short cycle times thanks to high dispensing frequency



› Small drop sizes for high-viscous adhesives facilitate component miniaturization

Features and control



DELO-DOT PN5

DELO-DOT PN5

Great performance throughout a long lifetime

With a continuous dispensing frequency of up to 300 Hz, DELO-DOT PN5 achieves reproducible results, even with drop volumes of just a few nanoliters. High-viscous materials can

be dispensed reliably without contact. Drop sizes can be individually adjusted by using interchangeable nozzles and a freely adjustable plunger stroke.



DELO-DOT PN5

Dimensions (W × D × H)	86 mm × 28 mm × 99.5 mm
Weight	485 g
Protection type	IP54
Viscosity	Up to 500,000 mPa·s (thixotropic) (to be tested depending on application)
Max. dispensing frequency	300 Hz Burst mode up to 400 Hz
Lifetime of drive (typ.)	1 billion cycles
Reproducible medium dispensing	± 2%
Temperature maintenance	Up to +100 °C temperature specification (regulated) The resulting nozzle temperature depends on the ambient temperature
Leakage protection	NC (normally closed) Leakage protection is ensured in the event of power or compressed air failure



DELO-DRIVERBOX PN

DELO-DOT pilot

DELO-DRIVERBOX PN, DELO-DOT pilot

The DELO-DRIVERBOX PN base unit is required for reliable control and supplies power to the DELO-DOT PN5. It is used to transmit cycle signals to the valve in real time and supplies power to the nozzle heater integrated in the valve.

Control takes place either directly through a powerful PLC or by way of the DELO-DOT pilot 1i cycle generator. With this device, cycles, heating signals and feedback signals can be created or queried easily with minimal programming effort.



DELO-DRIVERBOX PN

DELO-DOT pilot

	DELO-DRIVERBOX PN	DELO-DOT pilot
Dimensions (W × D × H)	61.9 mm × 20 mm × 71 mm	25 mm × 116.6 mm × 100 mm
Weight	73 g	120 g
Power supply		24 V (±10 % max.)
Power consumption during operation		100 W
Power consumption in standby mode		Idle: 1 – 2 W Off: < 1 W

Sustainability through modular design

Simplest maintenance and cleaning of the fluid system

The jet valve's plunger is made of ceramics and carbide. These break and crack resistant materials help to ensure a lifetime of several hundred million cycles, even when processing filled materials.

During the bonding process, only a few of the components within the fluid system come into direct contact with the adhesive; however, these components are easy to clean.

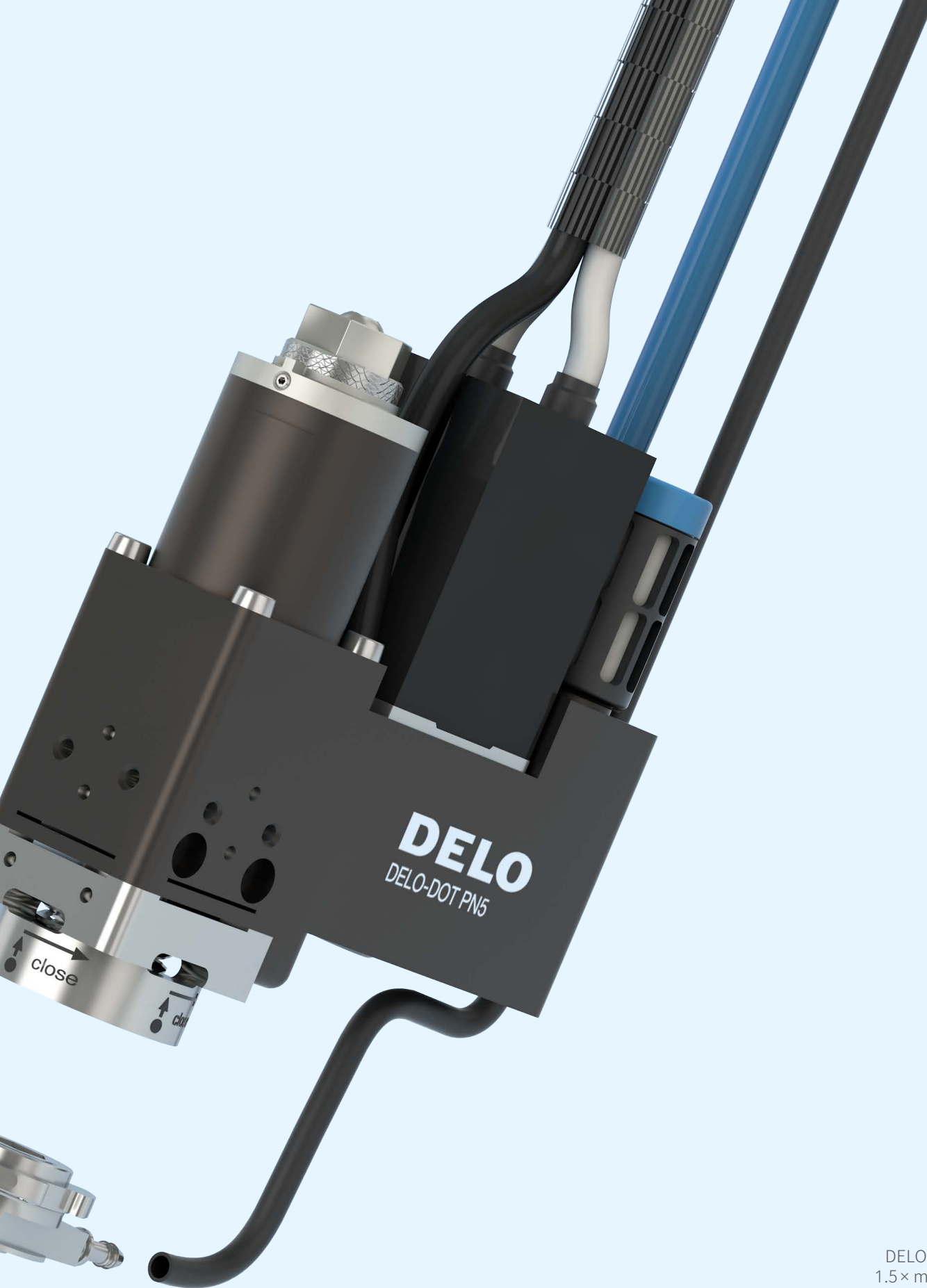
Thanks to the pneumatic jet unit's two-part design, both the plunger and the nozzle can be replaced by the customer. The unit features a bayonet lock that allows easy removal of the fluid system without any tools.

Nozzle with plunger →



Learn more:

www.DELO-adhesives.com/DELO-DOT-PN5



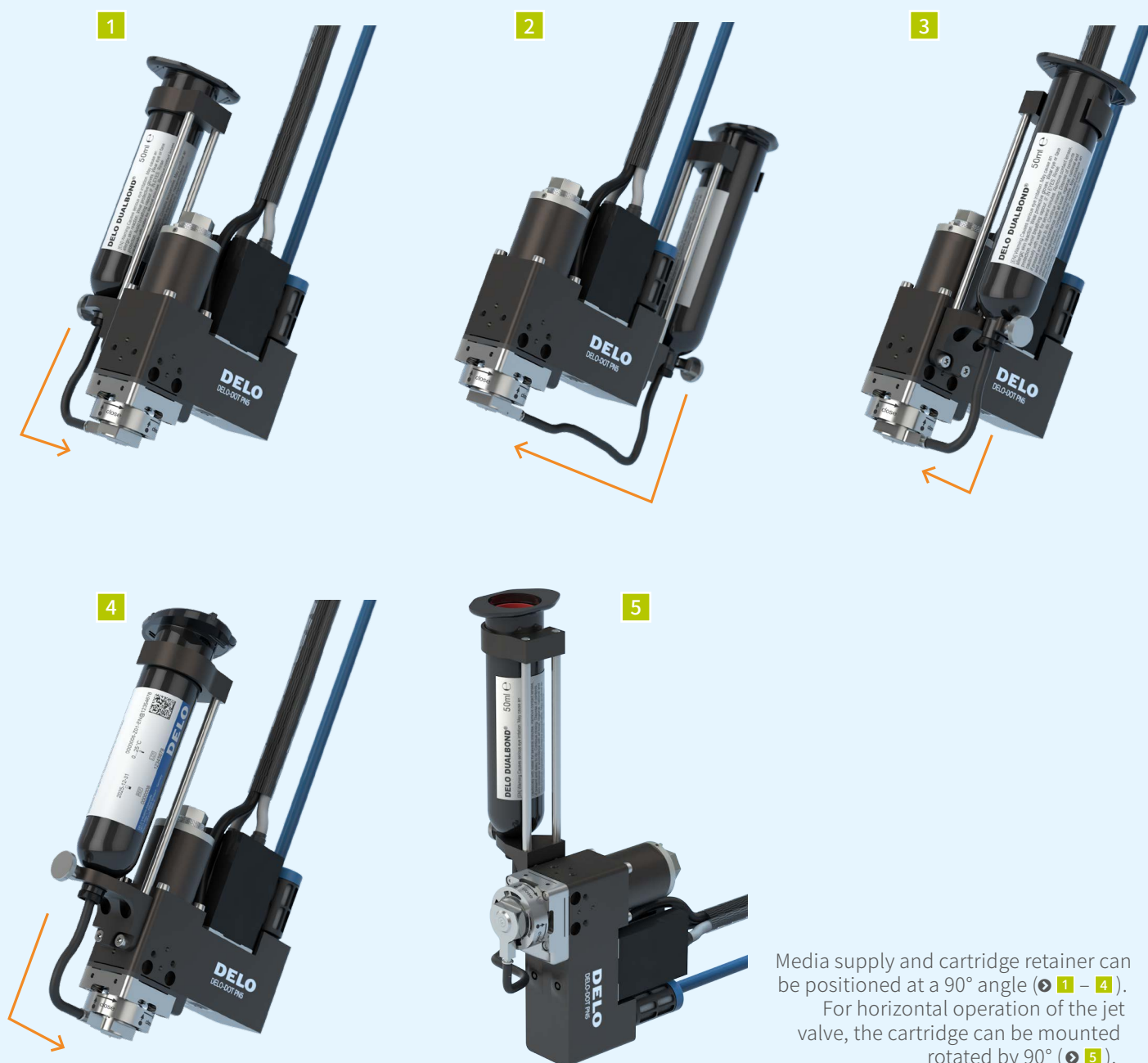
DELO-DOT PN5 in
1.5× magnification

Flexibility in the process

User-friendly integration into production systems

The control units are not the only user-friendly and space-saving design feature on the DELO-DOT PN5. Both the media supply unit and the cartridge retainer have the ability to be

individually positioned at a 90° angle, further simplifying integration into production lines.



Media supply and cartridge retainer can be positioned at a 90° angle (☉ 1 – 4). For horizontal operation of the jet valve, the cartridge can be mounted rotated by 90° (☉ 5).

Wide range of connection possibilities

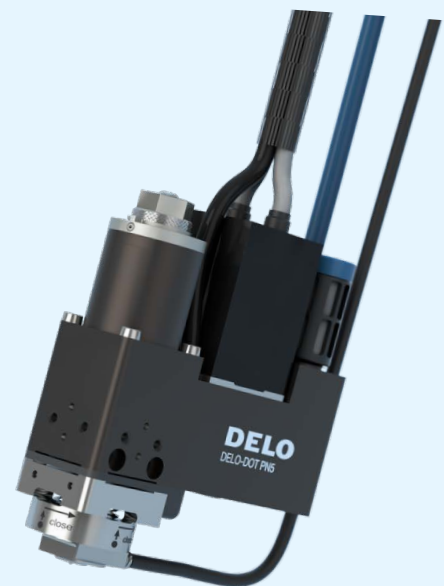
Jet valve enables use of different containers

The cartridge retainer, which is well suited for connection to a small cartridge, provides the required stability even in dynamic dispensing applications.

Media can also be supplied through a hose from a variety of different containers, including large cartridges, liter bottles or tin containers.



DELO-DOT PN5
with a small cartridge



DELO-DOT PN5
with a product hose

Like all DELO devices, DELO-DOT PN5 is developed and manufactured in Windach according to the highest quality standards.



DELO-DOT PN5 in action

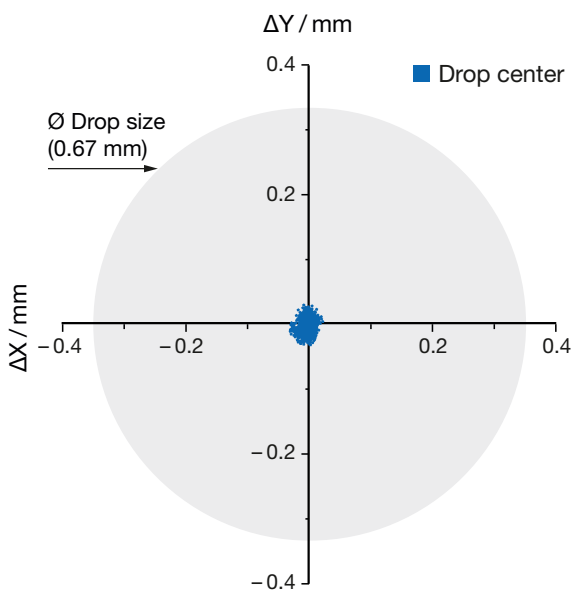
Process reliability confirmed by standardized tests

Precise application

DELO-DOT PN5 enables precise adhesive application with an average deviation of $\pm 1.5\%$, as is the case in this dispensing example. The graphs show the drop center positions of

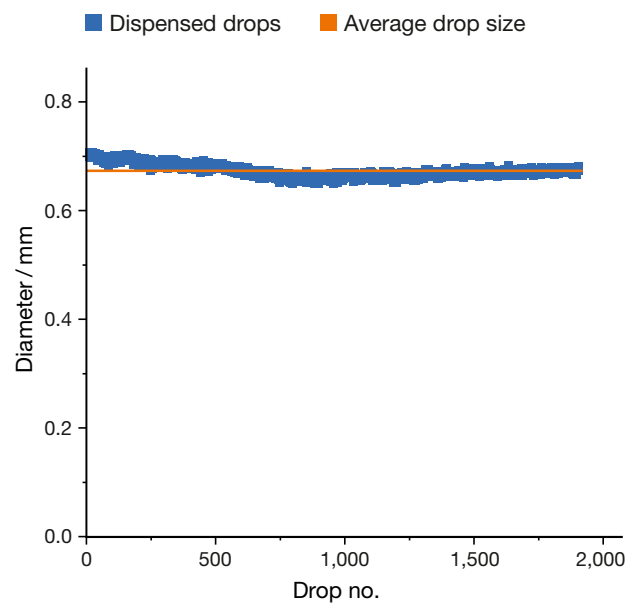
2,000 measured drops in relation to the average drop size. The standard deviation $\sigma = 0.01$ mm to the average drop size of 0.67 mm is extremely small.

Consistent position of the drop center



Precise adhesive application with an average deviation of $\pm 1.5\%$

Consistent drop diameter

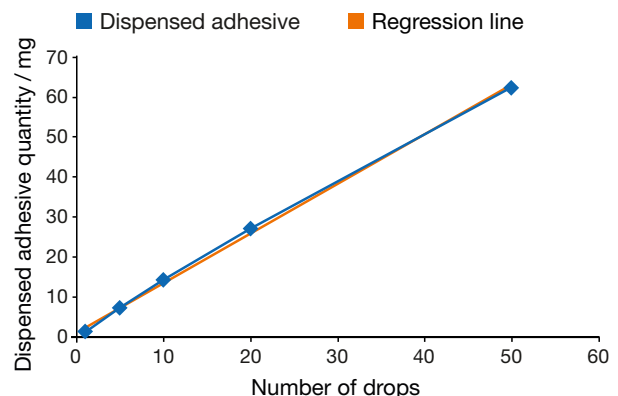


Consistent drop diameter with an extremely small standard deviation of $\sigma = 0.01$ mm

Reliable scalability of the adhesive quantity

With a coefficient of determination of $R^2 = 0.99$, the dispensing volume is linearly related to the number of drops. The adhesive quantities to be dispensed can therefore be reliably scaled via the number of pulses. This is useful for certain applications, such as the jetting of balancing compounds (application example p. 11).

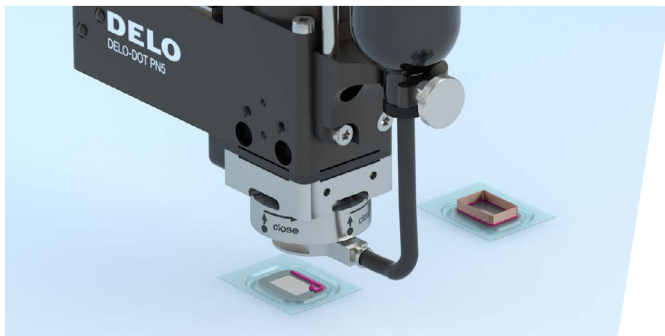
Linear relationship between number of drops and dispensing volume



Very good scalability due to linear relationship between number of drops and dispensing volume

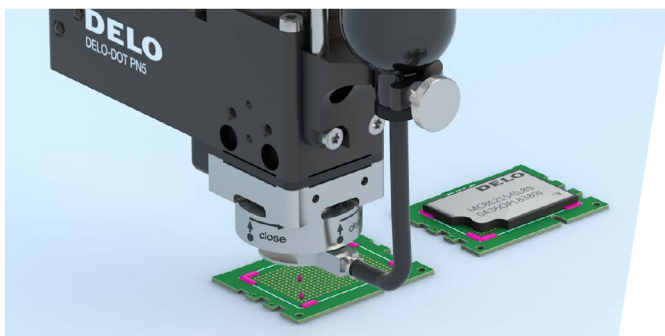
Highest performance in practice

Wide range of applications in industry



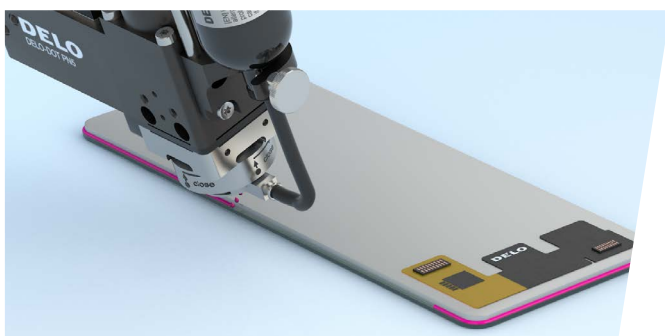
Jetting for speaker components

Extremely precise cycles, even at high dispensing frequencies, ensure uniform and rapid application of adhesive beads, for example when bonding coils in smartphone speakers.



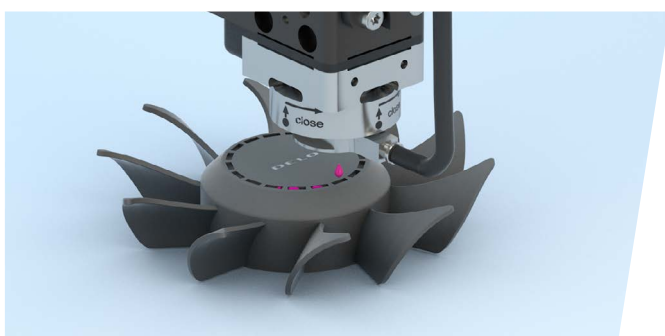
Edge bonding of chips

DELO-DOT PN5 can be used for contactless high-speed application of adhesive beads, like in the edge bonding of chips. It allows adhesive to be dispensed quickly and precisely without the risk of contaminating or even damaging components with a dispensing needle.



Edge coating of screens

Thanks to the extremely small deviations of the average drop sizes, the jet valve is ideal for applications that require maximum precision, like transparent bonding of smartphone screens.



Jetting of balancing compounds for electric motors

DELO-DOT PN5 allows even the smallest volumes to be dispensed with precision, repeatability, and linear scalability. This works particularly well with highly filled adhesives, which are used, among other things, as balancing compounds for additive balancing of small rotors or fan impellers in electric motors.

DELO

DELO Industrial Adhesives

China | Germany HQ | France | Italy | Japan | Korea
Malaysia | Singapore | Thailand | Czech Republic | USA

The technical data is for informational purposes only. Specific values can be found in the user manual. It is the user's responsibility to test the suitability of the device for the intended purpose by considering all specific requirements. If you need support in using the devices, please feel free to ask your contacts in our Engineering Department.

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