

Apply lubricant optimally

Efficient and safe lubrication of small parts or: contact dosing vs. non-contact dispensing

When lubricating small transmission parts in the automotive sector, such as outside mirror and headlight adjustments, speedometer gears, etc., high demands are placed on the application of the lubricants. Contact metering, which is widely used, has some disadvantages compared to non-contact dispensing (jetting).

Questions around the application of lubricant – There are various practical problems to be solved in the sustainable lubrication of small parts (Image 1). The cause is usually inaccurate dispensing of a wide variety of lubricants. The consequences:

- If too much lubricant is applied, it will run out of the component at higher temperatures
- If there is too little grease, the component will not be sufficiently lubricated and will have a reduced service life and/or poorer performance

Both quickly lead to additional costs due to rejects and complaints. To avoid these problems of contact dispensing, a complex and expensive process control is usually necessary.

The solution - contactless dispensing – the PDos X1 jet valve (Image 2) operating in this way offers all the advantages of non-contact jet technology. It dispense all lubricants with maximum precision and a repeatability of up to 99% (in relation to the respective dispensing quantity). Errors due to deviating grease quantities are thus excluded. Even from distances of up to 50 mm, the desired location is precisely hit. Even component or position tolerances are no problem. The lubricant always reliably lands exactly where it is needed.

The dispensing valve can also be easily integrated into existing lubrication processes: The G1/8 female threaded fluid connection fits into common grease supply systems without any special adaptation (Image 3). Even the usual pressure (100 bar) in central grease supply systems is no problem. However, one aspect must be taken into account here: If the valve is not fed from cartridges but from a hobock, a drain system for the hobock, a high-pressure line to the valve and a pressure reducer upstream of the jet valve must be provided.

Practical tip from Julian Greiner:

Temperature is an important process parameter. Make sure that the grease is always heated to the same temperature when it reaches the nozzle. Different temperatures of the grease lead to fluctuations in the dispensing result. Process reliability suffers as a result. High cycle frequencies also generate a temperature change due to the higher grease flow. The grease can cool down the system and the heating system must therefore have sufficient power for high frequencies.

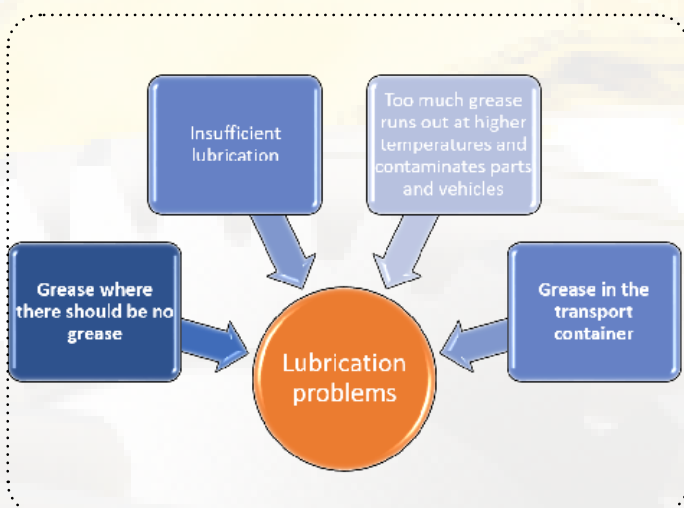


Image 1: Common practical problems that can be solved with the right dispensing technology
(Image: perfectdos GmbH)

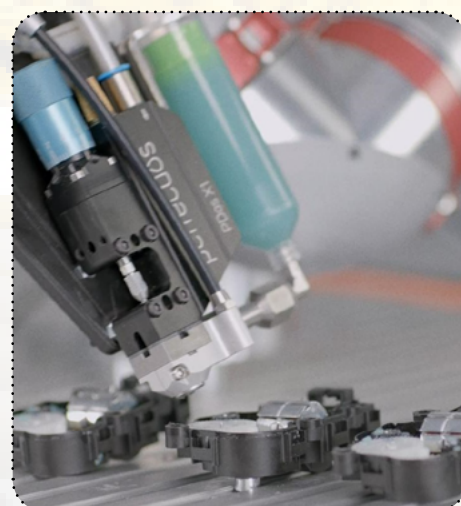


Image 2: With 300 Hz cycle frequency, a high dosing frequency is achieved at a distance of 50 mm for horizontal and overhead exposures
(Image: perfectdos GmbH)

Quickly: 300 bars / sec.

Repeatable: >99%

Savings potential: up to 30%*

Like all perfectdos dispensing valves, the PDos X1 jet valve operates mechanically as a „normally closed“ system (NC). In the event of a failure of the supply media, leakage is thus reliably prevented. This is important when the lubrication valves are fed from a central supply. With a normally open valve, the entire machine would be filled with grease.

The jet valve offers further advantages in process control. It can be easily controlled from the plant control system. The solution is thus flexible with regard to the wide range of variants of the assemblies to be produced.

Another advantage of jetting is the simple and cost-effective process monitoring via light barrier. This is not possible with contact dispensing. There, an expensive, optical process control must be used. The laser light barrier used by perfectdos monitors every droplet that passes the barrier - even transparent, extremely small and/or extremely fast droplets. The sensors of the light barrier are automatically cleaned so that even contamination in the grease does not cause a malfunction. With this solution, product quality can be increased ve-

ry efficiently. Non-lubricated parts are separated and optimally lubricated parts remain in the production process.

Precise non-contact dispensing with the PDos X1 jet valve is a concept that pays off, because it uses less material and produces less scrap, and enables simple process control. In this way, a lot of money can be saved with increased quality. From a total cost of ownership point of view, it should also be taken into account that 300 cycles/s allow faster production, and that the simpler machine design also saves money. All in all, therefore, many aspects speak in favor of this concept (Image 4). The potential of non-contact dispensing compared to contact dispensing is shown here. The values are based on practical experience. While contact dispensing comes close to non-contact dispensing in terms of process integration, reliability and dispensing results, jet technology offers considerable potential in terms of savings, material flexibility and shorter production times.

I would be happy to support you with your project

Julian Greiner

Phone: 0049 89 9042019-20

Mail: julian.greiner@perfectdos.de

perfectdos GmbH

www.perfectdos.com

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* compared to a comparable contact dosing solution

Requirements:

Impulse Time:	from 1.9 ms
Break Time:	from 1.4 ms (max. 300 Hz)
Switching Accuracy:	+/- 50µs
Operating Voltage:	24 VDC
Current:	1.0 A (peak: 4.6 A; 100 µs)
Power:	6.5W after 6 ms

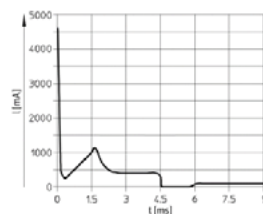


Fig.: Current course in the first 9ms, after applying 24 V DC.

Image 3: Easy to connect - easy to integrate into existing systems
(Image: perfectdos GmbH)

[List of successfully dispensed greases without contact](#)

Image 4: Contactless dispensing offers many advantages
(Image: perfectdos GmbH)

