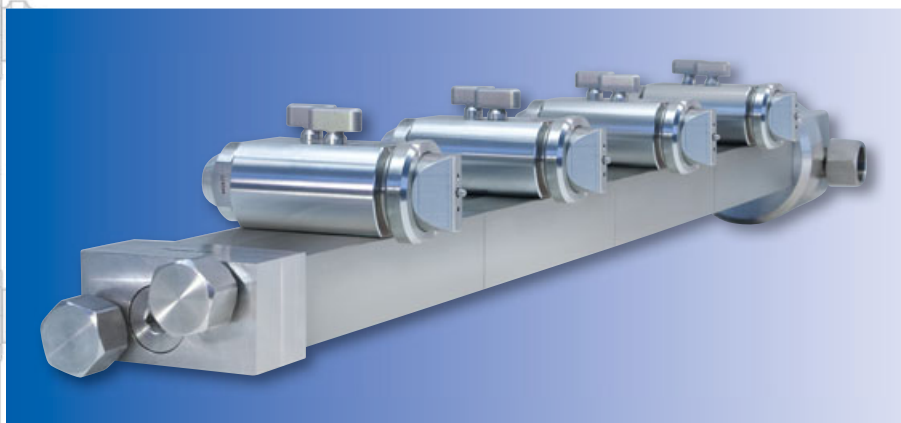


Schlick Anti-Bearding Technology (ABC-Technology®)

and

Schlick PCA - Professional Coating Arm



Areas of application:

- Coating
- Humidifying
- Treating
- Gluing
- Moistening

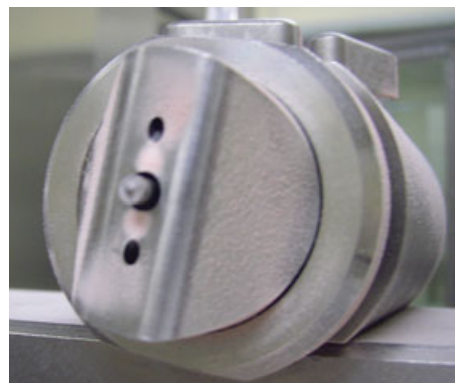
Schlick Anti-Bearding Technology

- The newly developed Schlick anti-bearding technology offers optimum operating security within coating facilities.
- The patented air cap for flat jet two-substance nozzles, the so-called „Anti-Bearding Cap“ (ABC), crucially prevents turbulence in the area of the air cap and the nozzle exit, by means of its novel rounded shape.
- Build-up, caking, „bearding“ or clogging of the nozzle exit are prevented as far as possible in this way.
- Interruptions to the coating process, as a consequence of cleaning work on the nozzle, are almost completely omitted.
- The Schlick ABC spray features an exceedingly homogenous liquid distribution, in a simultaneously very fine, uniform and reproducible drop size distribution.
- The Schlick anti-bearding technology is provided for lab coaters and for production facilities. A simple scale up is possible.



Conventional flat jet nozzle

- Air cap with „horns“
- Typical bearding
- Air ducts are clogged
- Spraying pattern is impaired



Schlick ABC nozzle

- Anti-bearding cap (ABC) without „horns“
- No bearding, only fine coating
- Free air ducts
- Optimal spraying pattern

A comparison of the flow patterns reveals that the dust particle flow (simulated here in the form of fog) stays away

from the anti-bearding cap better than it does from the conventional flat jet cap.



Standard Flat Jet Cap

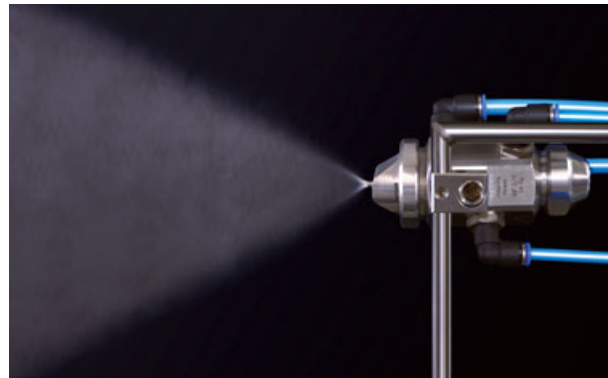


Anti-Bearding Cap (ABC)

ABC - Nozzle Models

Schlick ABC nozzles are characterised by:

- GMP design: Simple construction consisting of 7 individual parts + O rings
- Cleaning needle
- Liquid return system is available
- Manual assembly / disassembly
- Easy cleaning
- Materials which conform to FDA (1.4404 = 316 L, EPDM O rings)
- Additional materials on request



Model series 970 Design 7-1 S75 - Nozzle for laboratory facilities

- Atomising design: Elliptical flat jet
 Spray cone: 10° – 60°
 Bore diameter: 0.5 – 1.2 mm
 Flow rate area: 5 - 50 g/min (for coating applications)
 Characteristics: Compact design, total height 89 mm
 Separate connections for atomising air and pattern air (for adjusting the flat jet)
 Simple and reproducible adjustment options
 for drop size and spraying angle using air pressure.



Model series 930 Design 7-1 S35 - Nozzle for production facilities

- Atomising design: Elliptical flat jet
 Spray cone: 10° – 60°
 Bore diameter: 0.5 – 2.2 mm
 Flow rate area: 50 -180 g/min (for film-coating applications)
 Characteristics: Separate connections for atomising air and pattern air (for adjusting the flat jet)
 Simple and reproducible adjustment options for drop size and spraying angle using air pressure.
 Available with liquid return system



ABC - Nozzle Models

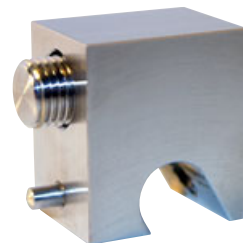
Model series 930 Design 7-1 S45 - Nozzle for production facilities

- Atomising design: Elliptical flat jet
- Spray cone: 10° – 60°
- Bore diameter: 0.5 – 2.2 mm
- Flow rate area: 50 -180 g/min (for coating applications)
- Characteristics: Shared connection for atomising air and pattern air
Adjustment of the spraying angle by means of various shutters in the nozzle body
Available with liquid return system



Fixing block for model series 930 S35 and S45

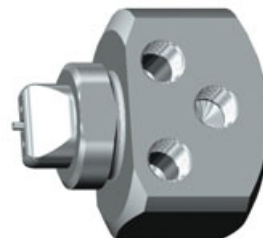
- Characteristics: Fixing unit for fixing to a post
Standard diameter 10 mm.
(other post diameters on request)



Special variants

Two-substance nozzle Model 970 Design 0 S75

- Without cleaning needle, without pneumatic control
- Total height approx. 55 mm



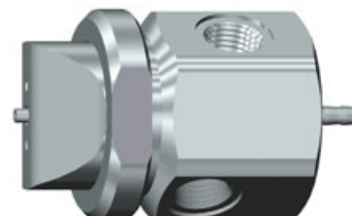
Two-substance nozzle Model 930 Design 0 S45

- Without cleaning needle, without pneumatic control
- Total height approx. 73 mm



Two-substance nozzle Model 930 Design 6 S51

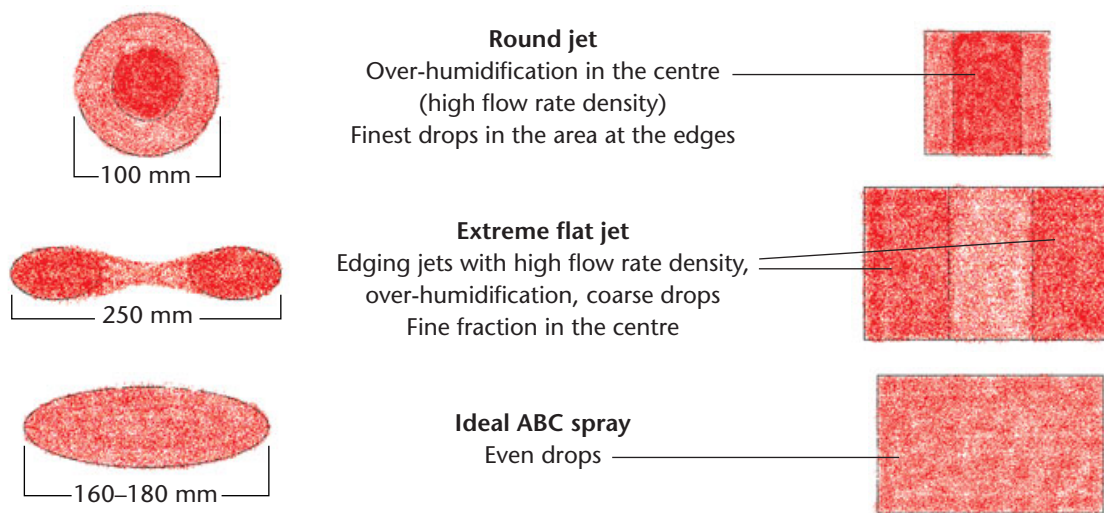
- Even (centric) liquid supply using hose spouts
- Continuous liquid duct
- Total height without spout approx. 64 mm



Adjustment parameters for ABC nozzles

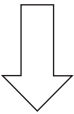
The ideal ABC spray is characterised by a very even ellipsis. This is achieved by means of a balance between the pressures - and therefore also the forces of the atomising air (AA) and the pattern air (PA). In the following figure, the various specifications of the different sprays and their characteristics are depicted by removing 200 mm from the nozzle exit.

The round jet occurs without the introduction of pattern air (PA).
 The extreme flat jet occurs when the proportion of pattern air (PA) is too high.
 The ideal ABC spray occurs when there is a balance between atomising air (AA) and pattern air (PA).



The optimal pressure for atomising and pattern air is controlled by the parameters, quantity of liquid, density

and viscosity as well as solid content: You must accommodate the respective application

| Combination options | Atomising air | Pattern air |
|--|-------------------|-------------------------------------|
| Fine atomisation!  | AA = 0.7 bar (OP) | PA = 0.7 - 1.0 - 1.5 bar (OP) |
| | AA = 1.0 bar (OP) | PA = 1.0 - 1.5 - 2.0 bar (OP) |
| | AA = 1.5 bar (OP) | PA = 1.5 - 2.0 - 2.5 - 3,0 bar (OP) |
| | AA = 2.0 bar (OP) | PA = 2.0 - 2.5 - 2.0 - 3,5 bar (OP) |
| | AA = 2.5 bar (OP) | PA = 2.5 - 3.0 - 3.5 bar (OP) |

The bore diameter of the nozzle should be dependent on the viscosity of the liquid. Here is an example for the production nozzle:

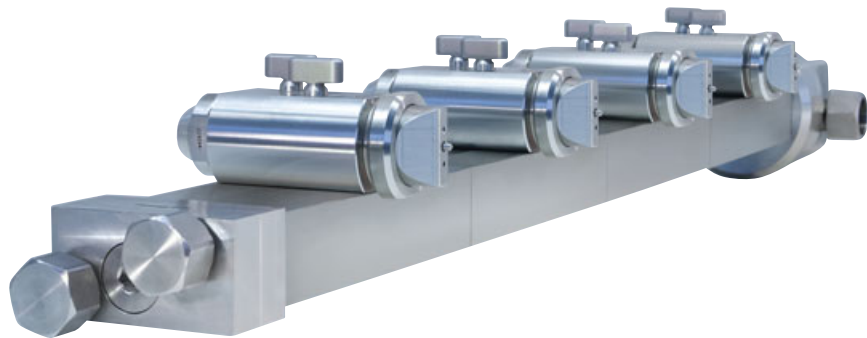
| Quantity of liquid | Viscosity < 100 mPas | Viscosity > 100 mPas | Minimum recommended atomising air pressure |
|--------------------|----------------------------|----------------------------|--|
| 30 – 60 g/min | Bore diameter 0.8 – 1.0 mm | Bore diameter 1.0 – 1.2 mm | AA = 0.7 bar (OP) |
| 60 – 120 g/min | Bore diameter 1.0 – 1.2 mm | Bore diameter 1.2 – 1.5 mm | AA = 1.0 bar (OP) |
| 120 – 150 g/min | Bore diameter 1.2 – 1.5 mm | Bore diameter 1.5 – 1.8 mm | AA = 1.5 bar (OP) |
| 150 – 180 g/min | Bore diameter 1.5 – 1.8 mm | Bore diameter 1.8 – 2.2 mm | AA = 2.0 bar (OP) |

The values given in the tables are recommendations.

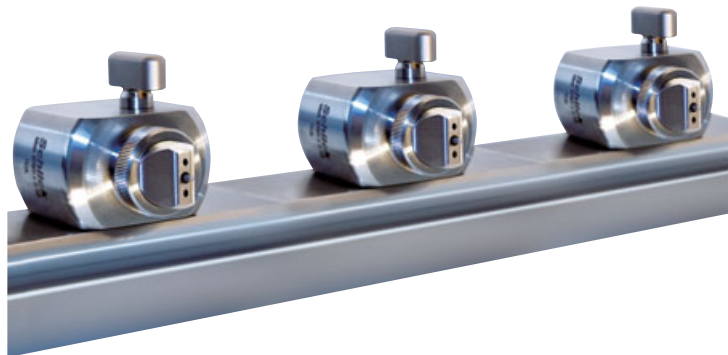
Schlick PCA – Professional Coating Arm

- The Schlick PCA is a spray arm specifically for coating applications. It comprises individual blocks which have one nozzle each. The number of nozzles can be varied from 2 to 8 by means of the modular construction system. Advantage: Assembly-related spacing errors between the nozzles are ruled out due to fixed, pre-determined block dimensions.

PCA with 4 nozzles
Production unit



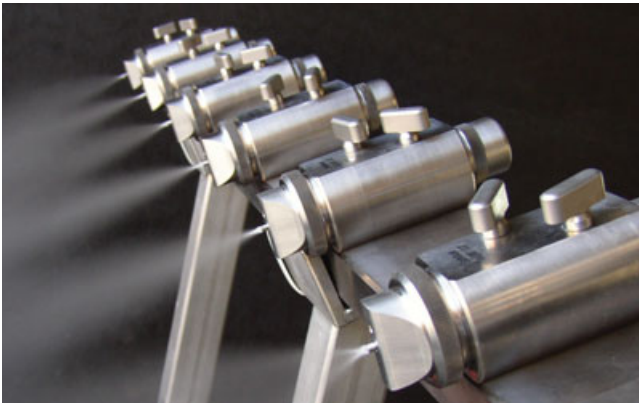
Lab coat PCA with 3 nozzles
Laboratory unit



- Schlick PCAs are - irrespective of the coating equipment - available for existing and new coating facilities. The connection mechanism for the PCA is individually adjusted for the respective coater.
- The PCA nozzles are fitted, as standard, with the new Schlick anti-bearding technology (ABC) as well as with cleaning needles.
- According to the design, the individual nozzles require neither hose couplings nor fittings. Thus dirty corners are basically eliminated and cleaning time can be significantly reduced.
- The Schlick PCA system is supplied complete. The following are covered within the scope of delivery: The control air connection for pneumatic control, the cleaning needle, the atomising air connection, the pattern air connection for regulating the flat jet angle as well as the liquid connection with supply and return system.

Schlick PCA – Professional Coating Arm

- Due to the substitution of the two-substance nozzles in comparison with the flat jet pressure nozzles, more simple and quick conversion to a sugar-coating arm is possible.



PCA spraying pattern with two-substance nozzles



PCA spraying pattern with pressure nozzles

- The assembly - disassembly time can be significantly reduced in comparison with a conventional coating arm.
- No special tools are required during assembly / disassembly. Only 2 screw fastenings need to be loosened. The individual nozzles are simply fastened by means of 2 screws. The single nozzles in turn comprise only 7 individual parts and O rings.

- In order to reduce the weight, most of the components are manufactured from titanium 3.7035. The remaining parts are all made from stainless steel 1.4404 (316L). Standard EPDM O rings (FDA-compliant) are used.

Service spectrum

Pilot test laboratory

Before any new spray nozzles are used we subject them to comprehensive trials in our own test laboratory – if need be to your operational parameters. During these tests, we precisely determine droplet size, velocities and flow densities with our modern DUAL PDA laser-measuring equipment.



Test nozzles

Schlick spray nozzles are world renowned for highest precision. We can offer you the best and most lasting solution to your requirements. And, if you want, we can supply you with test nozzles in advance – just contact us.

Engineering

Take advantage of our comprehensive expertise – from design to installation – the conception of new products or

the optimisation of existing plant. We would be glad to help you improve the success of your operation.

Repair service

As well as competent advice and its inception, you can profit from an efficient after-sales service that guarantees long-term supply of all products. We carry out both repair and conversion of Schlick spray nozzles, and in emergency, we can supply spare parts quickly and reliably.

Onsite service

If required we will investigate and develop an optimal solution to suit individual requirements onsite. We will advise you and give you support during installation and initial start-up of the plant. A further plus is the help available from our worldwide technical field service network.

Custom products

As one of the leading spray nozzle manufacturers in Europe, we can offer both high quality standard solutions and are in the position of developing customised products for individual tasks as fast as possible, even for small production runs.



Documentation to the customer's requirements

Reliability and quality are the basis for successful cooperation with our international customers. This applies both to our products and to our service. If you wish, we will supply you with all necessary documentation such as technical handbooks for the nozzles (drawings, flow diagrams, installation and operating instructions) together with factory and material specifications.



All specifications are subject to change (flow rates/dimensions).

The performance/flow rate specifications quoted are descriptive or product identities and can vary by up to ±5 percent on delivery.



Düsen-Schlick GmbH
Hutstraße 4
96253 Untersiemau
Germany
Tel. +49 95 65 94 81 0
Fax +49 95 65 28 70
info@duesen-schlick.de

www.duesen-schlick.de
www.duesen-schlick.com