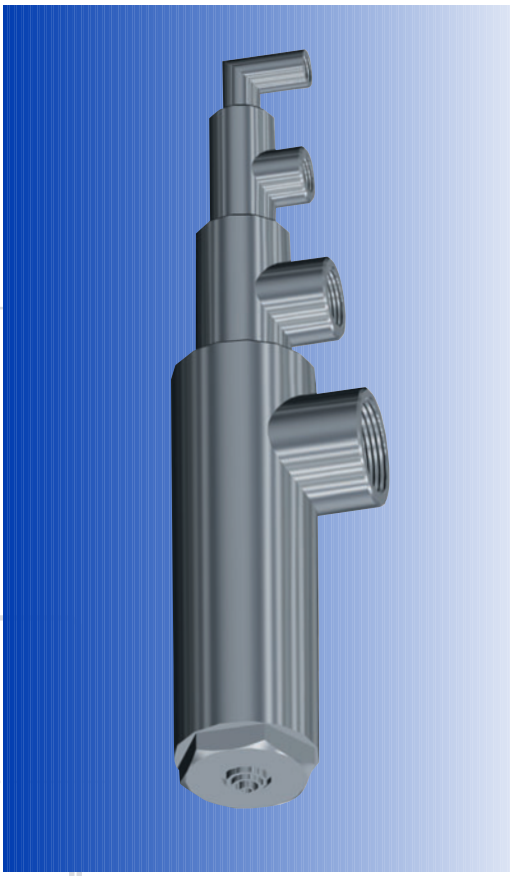
Schlick
Atomizing technologies

# Schlick Series 946-0/56 Three- and Four-Substance Nozzles



**Applications:**

- Adsorption
- Coating
- Combustion
- Finishing
- Fluid bed technology
- Granulating
- Mixing
- Process engineering
- Recovery
- Spray drying
- Tobacco industry

Technical information 21/01

## Schlick multi-substance nozzles

- Multi-substance nozzles allow very fine atomisation of several liquids with one nozzle and only one atomising medium (air, gas or steam). At the same time, an extremely intensive mix of the liquids takes place when they leave the nozzle's orifice.
- There is also the possibility of additionally feeding a channel with air, gas, or steam to ensure a larger area of exchange between atomising medium and liquid.
- Reactions between the various liquids inside the nozzle are ruled out, as the media have no contact until they mix externally when leave the nozzle's orifice.
- The multi-substance nozzles generate a full cone spray pattern.
- The spray angle can be varied 10° to 40°.
- The droplet size can be individually set from the ratio of the drive media mass to the liquid mass.
- A liquid control range of 1:10 is achievable (under certain circumstances 1:30 is possible).
- Multi-substance nozzles are generally designed as three or four-substance assemblies.

## Schlick three-substance nozzles

There are two methods of operating three-substance nozzles:

**Combination 1**
Atomising medium – liquid – atomising medium
A finer, more uniform atomisation can be achieved with combination 1 in comparison with two-substance nozzles using the same volume of air (gas, steam) and therefore energy consumption by suitable selection of cross-sections and because of the larger phase interface area between atomising medium and liquid.

**Combination 2**
Liquid 1 – liquid 2 – atomising medium
Two liquids can be simultaneously atomised using combination 2.

## Schlick four-substance nozzles

There are two methods of operating four-substance nozzles:

**Combination 1**
Liquid – steam/air – liquid – steam/air
Increase in the phase interface area between atomising medium and liquid.

**Combination 2**
Liquid 1 – liquid 2 – liquid 3 – steam/air
Simultaneous atomisation and mixing of three liquids.

# Three-substance nozzles

**Model 946 S1 – Three-substance nozzle**
With centrical air/liquid channel as control needle

Fig. 21001

**Model 0/4 S41 – Three-substance assembly**

Fig. 21002

**Model 0/5 S30 – Three-substance assembly**

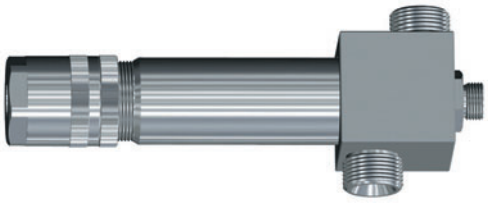


Fig. 21003

# Performance specification of three-substance nozzles

| Model description | Atomising medium at 6 bar in Normal m³/h of air | Maximum water flow rate in l/h | Mean volume droplet size in microns | Kg drive medium/ kg water |
|---|---|---|---|---|
| Model 946 S1 | 32 | 100 | 50 – 70 | 0.30 |
| Model 0/4 S41 | 98 | 300 | 50 | 0.39 |
| Model 0/5 S30 | 220 | 650 | 50 | 0.40 |
| Model 0/56 S3 | 550 | 2100 | 70 – 80 | 0.30 |
| Model 0/56 S7 | 550 | 2100 | 70 – 80 | 0.30 |
| Model 0/56 S9 | 260 | 1030 | 70 – 80 | 0.30 |
| Model 0/56 S12 | 440 | 1740 | 70 – 80 | 0.30 |
| Model 0/56 S15 | 1970 | 7800 | 70 – 80 | 0.30 |
| Model 0/56 S16 | 920 | 3600 | 70 – 80 | 0.30 |

# Four-substance nozzles

**Model 0/56 S20 – Four-substance assembly**

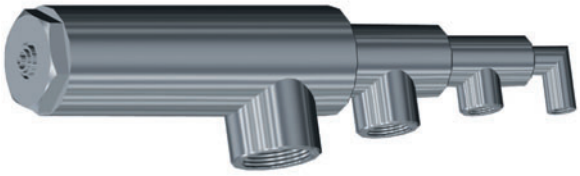


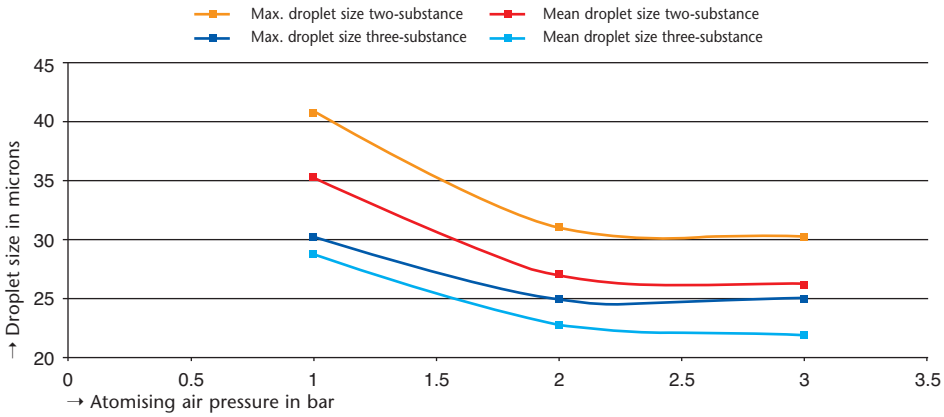
Fig. 21004

# Performance specification of four-substance nozzles

| Model description | Atomising medium at 6 bar in Normal m³/h of air | Maximum water flow rate in l/h | Mean volume droplet size in microns | Kg drive medium/ kg water |
|---|---|---|---|---|
| Model 0/56 S11 | 350 | 1380 | 50 – 70 | 0.30 |
| Model 0/56 S17 | 79.3 | 310 | 50 – 70 | 0.30 |
| Model 0/56 S18 | 460 | 1820 | 70 – 80 | 0.30 |
| Model 0/56 S20 | 430 | 1705 | 70 – 80 | 0.30 |

# Droplet size

**Comparison of droplet size for Schlick Model 0/4 Two-substance nozzle and Schlick Model 0/4 S41 Three-substance nozzle** (air-liquid-air combination) at the same liquid flow rate




# Materials

- Acid resistant stainless steel
- Heat resistant stainless steel
- HASTELLOY
- INCONEL
- Tantalum
- Titanium

Custom products from other materials available on request

# Custom designs/specialities

**Model 0/56 S9 – Three-substance assembly**
Angled at 15°

Fig. 21005

**Model 0/56 S3 – Three-substance assembly**
With rounded air cap and ball clamp
Model 0/81 for swivel installation

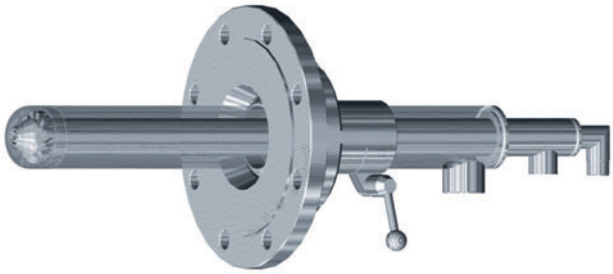


Fig. 21006

**Model 0/56 S16 – Three-substance assembly**
For welded installation, simplified air cap

Fig. 21007

**Model 0/56 S11 – Three-substance assembly**
With flange connection, can be disassembled

Fig. 21008

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# 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.

Certified by
TÜV CERT
DIN EN ISO 9001:2000
Zertifikat: 01 100 041248
to DIN EN ISO 9001: 2000

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