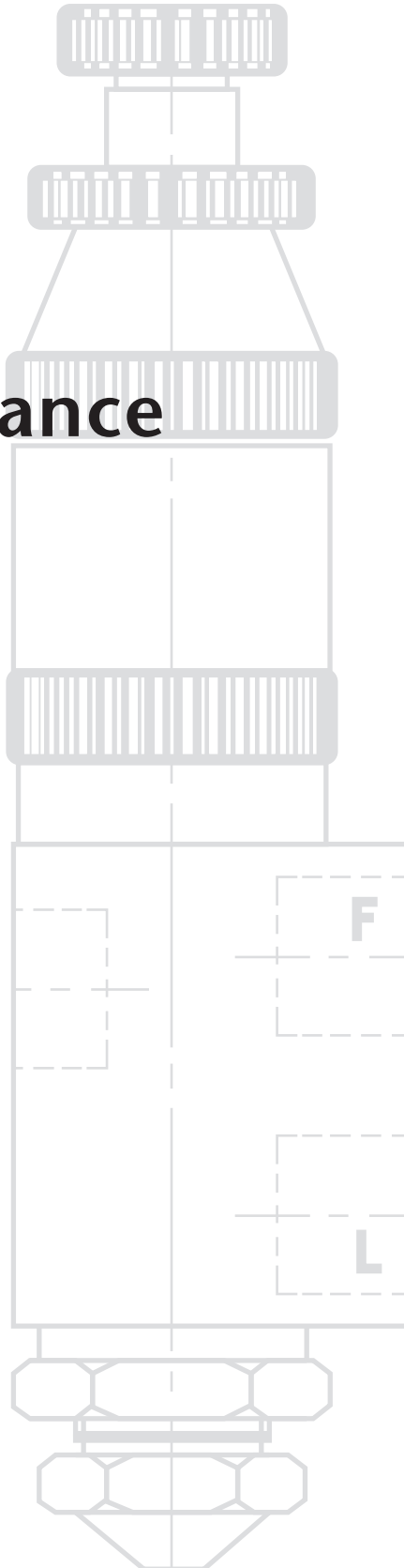


Schlick Series 970 Two-Substance Nozzles

Applications:

- Air conditioning
- Coating
- Combustion
- Disinfecting
- Finishing
- Fluid bed technology
- Granulating
- Humidifying
- Metering
- Mixing
- Process engineering
- Recovery
- Spray drying
- Sterilising
- Tobacco industry
- Vaccinating



Schlick two-substance nozzles

- The 970 Models are two-substance spray nozzles of precision design. They atomise liquid to get a large specific surface with the help of atomising air, steam, or gas.
- The 970 Models are of modular design, allowing the nozzles to be converted to other forms without problem.
- All individual parts are available as spare parts. This ensures performance repeatability.
- The liquid can be injected or fed under pressure or under the force of gravity.
- The nozzle allows independent regulation of the liquid and the atomising medium.
- External mix allows the droplet spectrum to be controlled by the atomising air pressure independent of fluid volume.
- The nozzles work with an atomising air pressure of 0.3 bar upwards.
- The liquid pressure drop can be used to control the flow rate on all models.
- On versions with a control needle the needle setting can also be used to control the flow rate. This provides a larger range of liquid control.
- These nozzles can be supplied in many variants.

Orifice:

Standard: 0.5 mm diameter

Also available: 0.3 mm to 1.0 mm diameter in gradations of 0.1 mm and up to 1.2 mm with the special S4 design

Flow rates:

minimum (S8) 28 ml/h

maximum (S4) 30 l/h

Atomised spray pattern:

The normal spray pattern is a full circular cone of 10° to 40°. With flat-jet cap: oval, flat spray of approx. 30° x 70°.

Type of atomisation:

Fog, down to very fine, droplet sizes of less than 10 microns can be achieved; air cap with scale for fine setting of the atomising medium's flow rate.

Depending on the application the air cap setting should be determined by trial and error (the normal cap setting is 5). Turn the air cap back to reduce the flow rate of the air and make the spray angle more acute. Turn the air cap forwards to increase the flow rate of the air and the size of the spray angle.

Nozzle designs

Form 0

Basic model (with blind plug). Designed for atomisation of liquids either injected or fed by gravity at a slight incline.

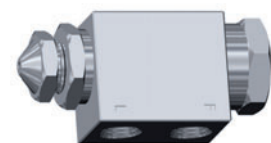


Fig. 15001

Form 3

Supplied with a needle for fast nozzle orifice cleaning during operation. Designed for the atomisation of sticky, impure, or highly viscous liquids, etc.



Fig. 15002

Form 4

Supplied with a control needle for atomising tasks having highly variable flow rates.



Fig. 15003

Nozzle designs

Form 5

As Form 4, but with graduations on the liquid control needle for fine setting of the flow rate, designed for experiments, laboratories, etc.



Fig. 15004

Form 7

Pneumatically controlled using the atomising air. The nozzle needle closes the orifice automatically and abruptly when the atomising air is shut off. Especially suitable for etching, marking, cyclic spraying and above all for liquids under pressure where drips are to be avoided.



Fig. 15005

Form 7-1

As Form 7, but with control by control air, with special connector. Independent control of the atomising and control air is possible.



Fig. 15006

Form 8

With solenoid valve.
 Standard design: 220 V, 50 Hz, 100 % ED.
 Ambient temperature:
 max. 55 °C, enclosure protection IP 65.
 Cycling frequency limited only by the changeover time.

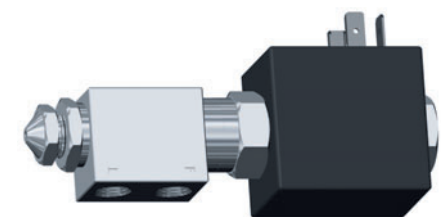


Fig. 15007

Alternative designs

Schlick two-substance spray nozzles Series 970 are available with a round or square body. The weight of the square design is, however, is considerably reduced. The slim

external outline of the square-bodied nozzle is highly suitable for space-saving installation. The rounded design reduces build-up of the sprayed product on the body.

Materials

- | | | | |
|----------------------------------|-------------|-----------|--------------------------------|
| - Brass | - HASTELLOY | - INCONEL | - Polypropylene |
| - Acid resistant stainless steel | - Tantalum | - PVC | Custom products from other |
| - Heat resistant stainless steel | - Titanium | - PTFE | materials available on request |

Performance specification and droplet size

Pressure or gravity liquid feed

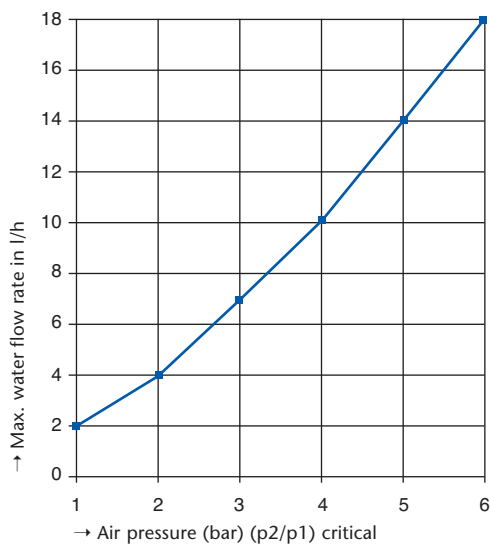
Orifice dia. in insert in mm	Air pressure in bar	Air consumption	Max. flow rate in l/min
		in Normal m ³ /h	
0.5	1	1.30	0.017
	2	2.10	0.060
	3	2.90	0.100
	4	3.63	0.130
	5	4.36	0.180
	6	5.08	0.230
0.8	1	1.30	0.026
	2	2.10	0.065
	3	2.90	0.100
	4	3.63	0.150
	5	4.36	0.200
	6	5.08	0.250

Liquid feed through injection

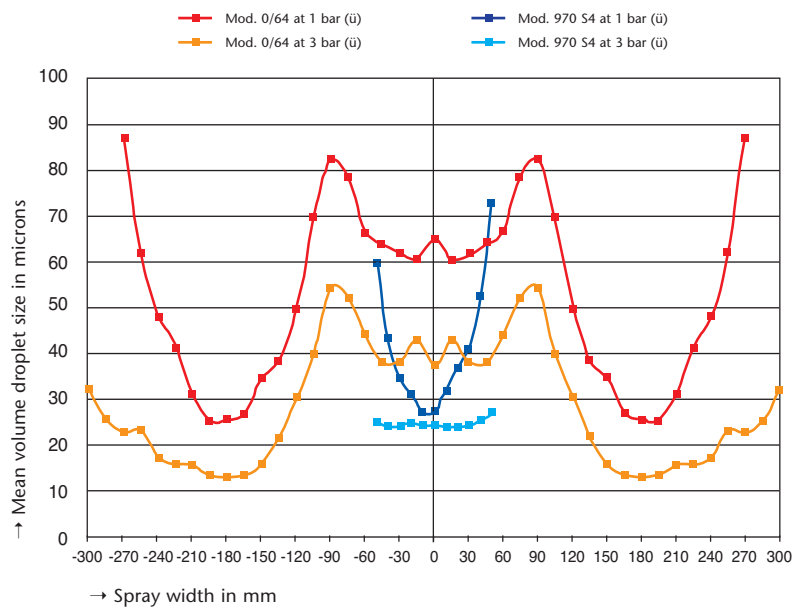
Orifice dia. in insert in mm	Air pressure in bar	Air consumption in Normal m ³ /h	Max. inlet flow in ml at inlet height of			Best air cap setting
			50 mm	150 mm	300 mm	
0.5	0.3	0.56	12	10	9	3
	0.5	0.83	25	24	18	3
	1.0	1.30	40	36	28	4
	1.5	1.75	46	44	40	4
	2.0	2.10	50	48	46	4
	2.5	2.54	54	50	45	4
	3.0	2.90	50	48	36	4
0.8	0.3	0.56	50	40	10	3
	0.5	0.83	80	98	35	3
	1.0	1.30	95	90	70	4
	1.5	1.75	108	100	85	4
	2.0	2.10	105	95	85	4
	2.5	2.54	100	–	–	4
	3.0	2.90	95	–	–	4

There is no injection effect for pressures less than 3 bar (g).
Values are referred to water at 16 °C.

Max. flow rate to achieve a mean droplet size of approx. 30 microns in relation to atomising air pressure



Comparison of droplet size of Models 970 S4 and 0/64: Water flow rate 7 l/h; atomising air pressure 1.0 – 3.0 bar; distance 200 mm



Custom versions

Model 970 S1 – Two-substance nozzle

(not illustrated)

Lengthened liquid insert

Max. 0.8 mm orifice

Standard liquid insert



Fig. 15008

Lengthened liquid insert



Fig. 15009

Liquid inserts

Lengthened liquid insert prevents clogging of the orifice during atomisation of sticky liquids

Model 970 Form 4 S3 – Two-substance nozzle

With shaft and fixing nut for attachment to a flange, etc. available in Forms 0, 4, 5, 7, 7-1 and 8

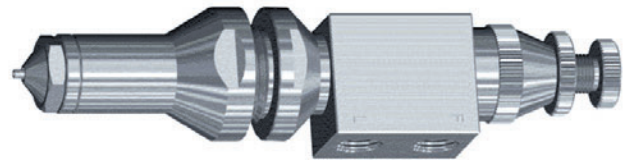


Fig. 15010

Model 970 S4 – Two-substance nozzle

Lengthened liquid insert; max. 0.8 mm orifice.

A higher airflow and thus finer atomisation in the upper performance range is possible because of the larger orifice.

Performance specification Model 970 S4

Orifice dia. in insert	Air pressure	Air consumption	Max. flow rate
in mm	in bar	in Normal m ³ /h	in l/min
0.5	1	2.20	0.030
	2	3.40	0.100
	3	4.50	0.130
	4	6.00	0.140
	5	7.10	0.200
	6	8.40	0.230
0.8	1	2.20	0.040
	2	3.40	0.110
	3	4.50	0.170
	4	6.00	0.240
	5	7.10	0.300
	6	8.40	0.350

Orifice dia. in insert	Air pressure	Air consumption	Max. flow rate
in mm	in bar	in Normal m ³ /h	in l/min
1.0	1	2.20	0.054
	2	3.40	0.120
	3	4.50	0.190
	4	6.00	0.280
	5	7.10	0.340
	6	8.40	0.430
1.2	1	2.20	0.100
	2	3.40	0.150
	3	4.50	0.230
	4	6.00	0.340
	5	7.10	0.410
	6	8.40	0.500

Custom versions

Model 970 S8 – Two-substance nozzle

With tapered needle and micron scale for atomising under gravitational or pressurised feed (with fixing support)

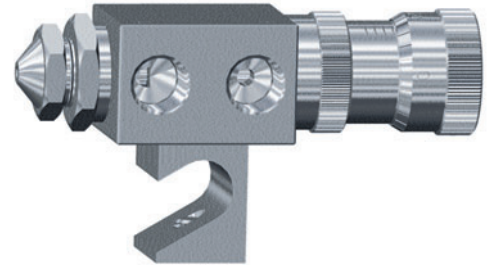


Fig. 15011

Model 970 Form 7-1 S 53 – Two-substance nozzle

With flat-jet cap, oval spray angle with max. 90° spray angle

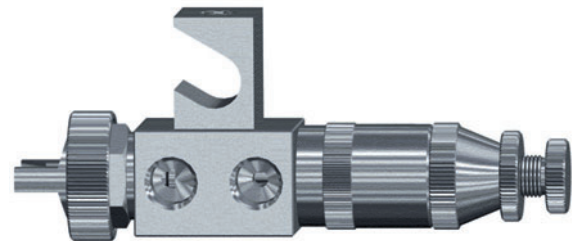


Fig. 15012

Model 0/64 Form 0 – Two-substance nozzle with patented internal mix air cap

- The liquid and atomising medium are intensively mixed inside the air cap. A fine two-phase mix exits the nozzle through several orifices
- A wider spray angle of approx. 70° is achieved with the internal mix air cap
- The velocity of the spray at the orifices is significantly less than that of external mix two-substance nozzles
- The flow density is virtually constant over the whole spray
- The Model 0/64 is available in all forms and can be converted to Model 970 simply by changing the air cap (and vice versa)

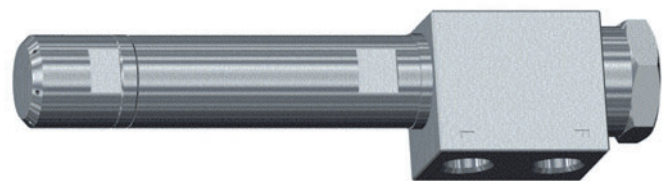
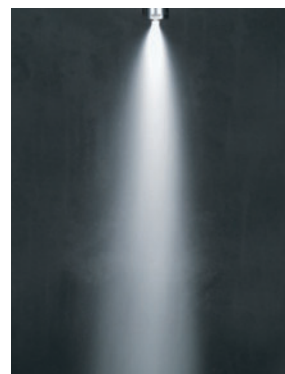
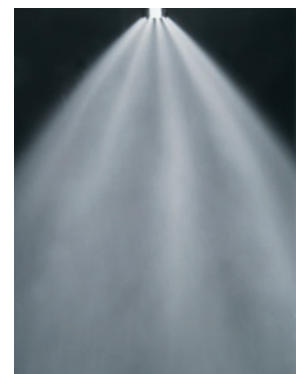


Fig. 15013



Spray pattern, Model 970 two-substance nozzle



Spray pattern, Model 0/64 two-substance nozzle

Custom designs/specialities

Model 970 Form 5 S76 – Two-substance nozzle

With heating/cooling sheath and shaft locking

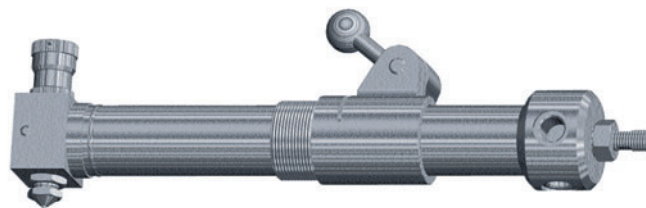


Fig. 15014

Model 970 Form 7-1 – Two-substance nozzle

With flange, lengthened liquid insert and cleaning needle

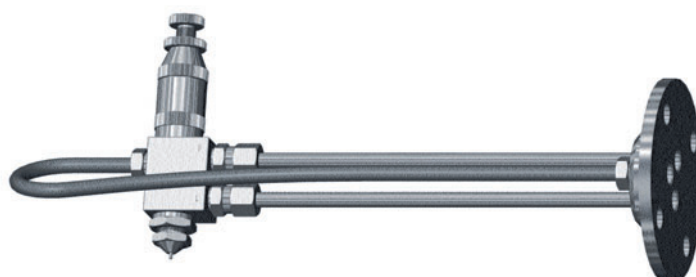


Fig. 15015

Model 970 Form 0 – Two-substance nozzle

With shaft and flange

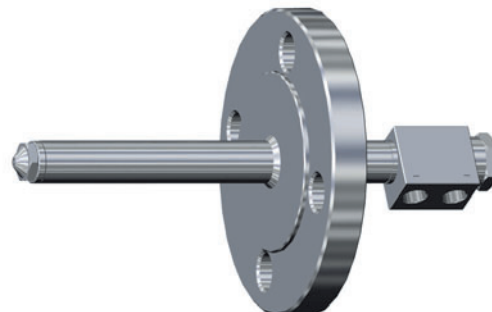


Fig. 15016

Model 970 Form 7-1 S77 – Two-substance nozzle

With pneumatic OPEN/CLOSED control and clamping piece

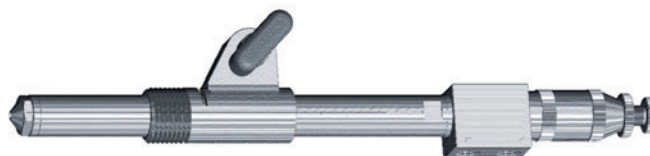


Fig. 15017

Model 970 Form 0 S73 – Two-substance nozzle

With shaft and Tri-Clamp connector



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