

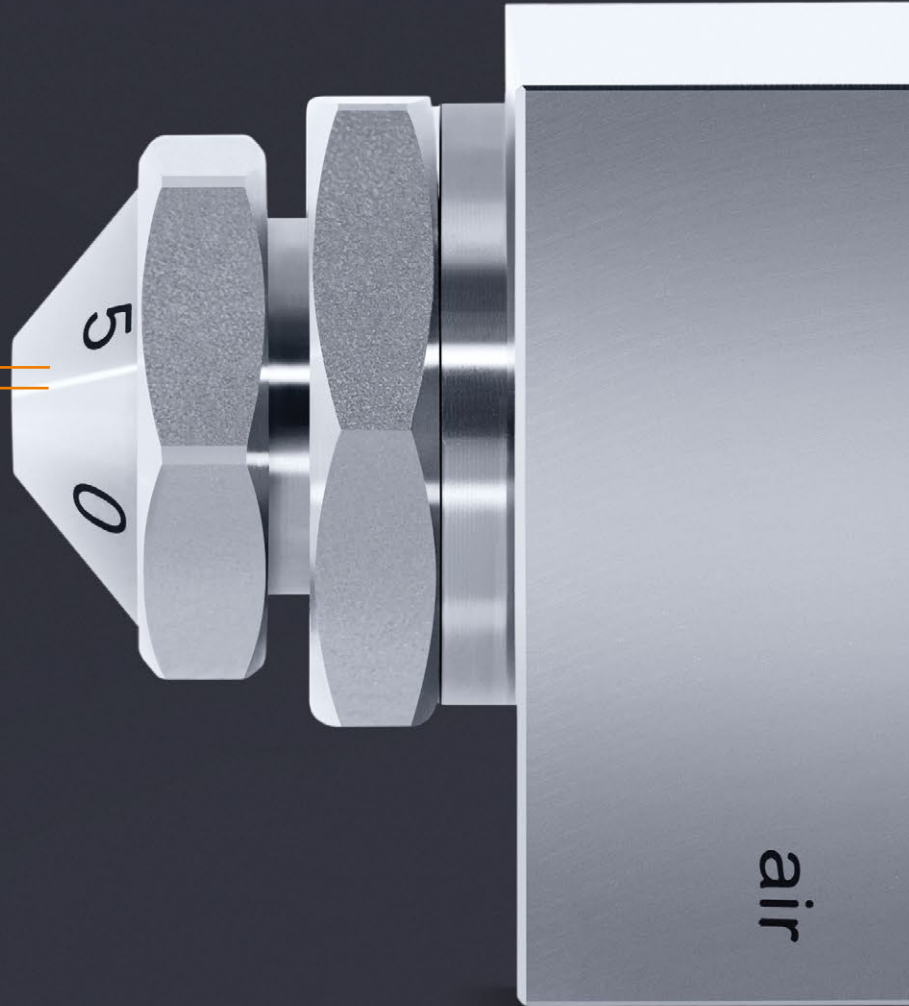
970系列模块化喷嘴 Module System Range 970

Mod. 970

● 可通过调整风帽位置精准调节雾化气体流量
Optimal spray result through precision adjustment of the air flow rate

● 核心组件的表面粗糙度小于0.8 (设计符合FDA要求)
Functional components with a surface quality of $Ra < 0.8$ (also available as designs conforming to FDA)

● 雾化液滴能小于10微米
Finest atomization with drop size smaller than 10 micrometres possible



SCHLICK 经典喷嘴系列 最精细雾化



liquid

liquid

模块化设计，
适用多种雾化场合

Modular system allows
diverse application
options

可选材质

- 耐酸不锈钢
- 耐高温不锈钢
- 黄铜
- 钽金属
- 钛合金
- 哈氏合金
- 铬镍铁合金
- 聚氯乙烯
- 聚四氟乙烯
- PP聚丙烯
- 客户指定材质

Materials

- Acid resistant stainless steel
- Heat resistant stainless steel
- Brass
- Tantalum
- Titanium
- Hastelloy
- Inconel
- PVC
- PTFE
- Polypropylene
- Custom materials available on request

产品目录
Product Overview

两液体喷嘴
Two-Substance
Nozzles

防滴漏/专业包衣技术
ABC/PCA Technique

三/四液体喷嘴
Three-/Four-
Substance Nozzles

多喷头技术
Multispray

喷射杆
Insertion Pipes

喷嘴头
Nozzle Heads

实心锥喷嘴
Full Cone Nozzles

空心锥喷嘴
Hollow Cone Nozzles

硬质合金喷嘴
Carbide Nozzles

扁平喷嘴
Flat Spray Nozzles

喷射喷嘴
Smooth-Jet Nozzles

混合喷嘴
Mixing Nozzles

拉瓦尔喷嘴
Laval Nozzles

清洗喷嘴
Cleaning Nozzles

喷嘴附件
Accessories

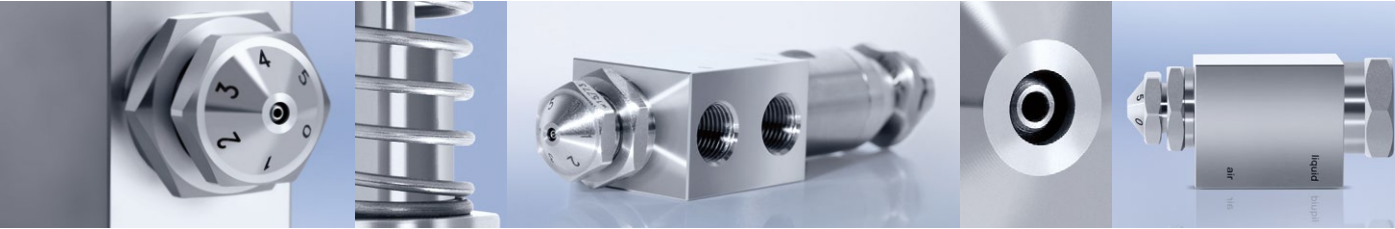
测试中心
Test Center

970系列模块化喷嘴

Module System Range 970

Mod. 970

两流体喷嘴/全锥形/外混型
Two-Substance Nozzles / Full-Cone / External Mixing



顶级喷嘴 - 专为实验室设计

970系列喷嘴，可采用压缩空气、煤气、蒸汽进行雾化，雾化面积大(最小0.3bar)

基于液体不同的粘度、密度和表面张力等参数，液体可采用真空吸入也可通过压力泵入，某些情况下，970系列喷嘴也可用作喷射喷嘴

外混型二流体喷嘴，可以独立调整流量大小和雾化液滴大小

970系列喷嘴，流量大小基本都是通过压力差控制的，配针阀的喷嘴，流量也可以通过调整针阀的位置来调节

970系列喷嘴全部采用模块化结构，这意味着喷嘴可以很容易改造成其他型号的喷嘴，而且每个零件都可以单独更换，不影响雾化效果。

THE ultimate nozzle – specially for the lab

The SCHLICK model 970 is a high-precision two-substance nozzle which transfers liquids onto specific large surfaces using compressed air, gas or steam – from 0.3 bar (g).







Depending on the viscosity, density and surface tension, the liquid can be aspirated over a gradient or fed under pressure. Within certain limits, the nozzles can also act as injectors.

External-mix two-substance nozzles allow independent control of the flow rate and fineness of the atomization.

The flow rate for all models is controlled through the liquid pressure difference. In the model with a regulating pin, the flow rate can also be regulated by the pin setting.

The SCHLICK model 970 is manufactured as a modular construction. This means that it can easily be rebuilt into other designs. Replacement parts are available for all individual parts, with reproducible results ensured.

	雾化形状(标准风帽) 圆锥形
	雾化形状(扁平风帽) 椭圆形
	雾化角度(标准风帽): 大致10°-40° 雾化角度(扁平风帽): 最大70°
	液滴大小: 10 - 50 μm
	处理量: 最小(S8) 28毫升/小时 最大(S4) 30升/小时
	常见喷嘴孔径0.5/0.8/1.0/1.2毫米 0.3毫米也能实现 客户定制设计的S4, 最大孔径1.2毫米

	Spray pattern (standard air cap): circular full-cone
	Spray pattern (flat spray cap): oval flat spray
	Spray angle (standard air cap): approx. 10° - 40° Spray angle (flat spray cap): max. 70°
	Droplet size: 10 - 50 μm
	Capacity: minimum (S8) 28 ml/h maximum (S4) 30 l/h
	Standard orifices: 0.5 / 0.8 / 1.0 / 1.2 mm Available bore size: 0.3 - 0.8 mm Customized design S4 max. 1.2 mm

神奇的SCHLICK雾化技术

无论粘度、雾化气流量、密度或表面张力如何，970系列模块化喷嘴基本都能满足。可配置调节针阀或防堵通针。喷嘴保证了雾化效果的一致性。

Clever SCHLICK technology

No matter what the viscosity, air flow rate, density or surface tension, the module system range 970 meets the most varied demands. Available with either a regulating needle or cleaning needle. Reproducible results guaranteed.



标有刻度的空气帽可精确调整雾化气体的流量，根据应用的不用，需要反复试验确定风帽的位置。

标准设置=风帽处于位置4

将风帽向后旋，雾化气流量变小雾化角度变小；将风帽向前旋，雾化气流量变大雾化角度变大

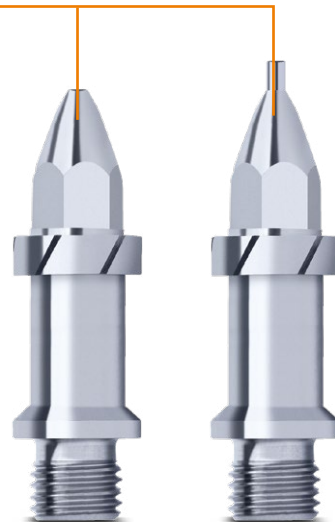
The air cap with scale enables the precision adjustment of the air flow rate for the atomization medium. Depending on the intended use, the required cap setting must be determined through trial and error.

Cap setting 4 = normal setting

By turning the air cap backwards, the air flow rate is reduced and the scatter cone becomes more focused. By turning the air cap forwards, the air flow rate and scatter cone become larger.

970系列喷嘴均可选用加长喷芯，有利于粘性液体的雾化以及最大程度减少喷嘴处的结须。

All nozzle forms can also be delivered with extended liquid inserts. These optimise the atomization of tacky liquids and minimise build-up at the air expulsion hole.

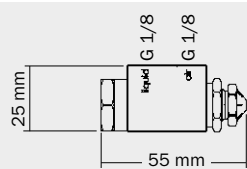


970系列模块化喷嘴

Module System Range 970

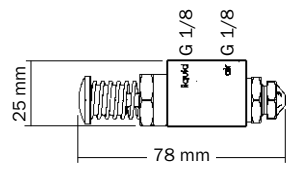
Mod. 970

两流体喷嘴/全锥形/外混型
Two-Substance Nozzles / Full-Cone / External Mixing



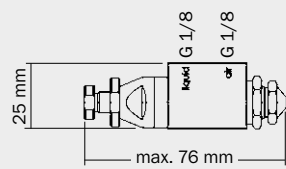
盲堵
Blind plug

= Form 0



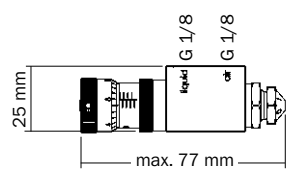
清洁通针
Cleaning needle

= Form 3



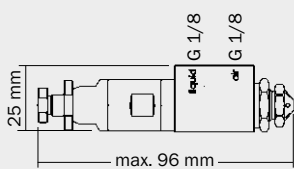
流量调节针阀
Liquid flow control needle

= Form 4



带刻度流量调节针阀
Liquid flow control needle with scale

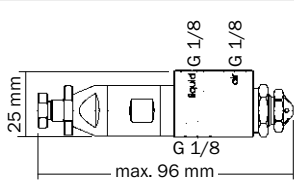
= Form 5



气动控制
Pneumatically controlled

= Form 7

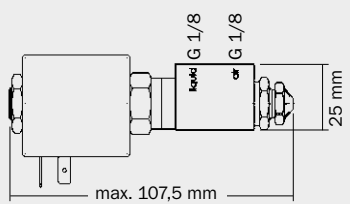
100% 无滴漏
drip-free



单独控制气控制
Pneumatically controlled by control air

= Form 7-1

100% 无滴漏
drip-free



电磁阀控制
Solenoid valve

= Form 8

100% 无滴漏
drip-free

如有技术变更,恕不另行通知。

<p>采用盲堵设计的基本款，用于吸入或者重力差供液的雾化场合</p>	<p><i>Basic model with dummy plug. Designed for the atomisation of liquids that are either siphoned or fed by gravity at a slight gradient.</i></p>
<p>采用防堵通针，生产过程中就能实现快速疏通喷嘴，用于高粘度或者有杂质的液体雾化场合</p>	<p><i>Supplied with cleaning needle. For fast nozzle orifice cleaning during operation. Designed for the atomisation of sticky, impure, or highly viscous liquids, etc.</i></p>
<p>采用流量调节针阀，用于流量大小经常变化的场合</p>	<p><i>Supplied with a liquid flow control needle for atomising tasks having highly variable flow rates.</i></p>
<p>和设计4类似，增加了刻度显示，可精准设置流量，用于测试、实验室等场合</p>	<p><i>As Form 4, but with a scale etched on the liquid control needle for fine setting of the flow rate, designed for experiments, laboratories, etc.</i></p>
<p>使用雾化气控制针阀，当雾化气关闭时，针阀顶出(也可换成防堵通针)，封闭喷嘴，适用于避免滴液的雾化场合，比如蚀刻、标记、连续喷涂等</p>	<p><i>Pneumatically controlled using the atomising air. The nozzle needle (also available as cleaning 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.</i></p>
<p>和设计7类似，增加了单独的控制气控制针阀(雾化气可不关闭)</p>	<p><i>As Form 7, but with control by control air, with special connector (atomising air can carry on blowing).</i></p>
<p>电磁阀控制 标准设计：230V 50Hz; 环境温度(100%使用)： 最大55°C; 防水等级：IP65; 循环频率仅受转换时间的限制t</p>	<p><i>With solenoid valve Standard design: 230 V, 50 Hz, 100 % ED Ambient temperature: max. 55 °C, enclosure protection IP 65 Cycling frequency limited only by the changeover time</i></p>

产品目录
 Product Overview

两液体喷嘴
 Two-Substance
 Nozzles

防堵针 / 专业包浆针技术
 ABC/PCA Technique

三/四液体喷嘴
 Three-/Four-
 Substance Nozzles

多喷头技术
 Multispray

喷嘴杆
 Insertion Pipes

喷嘴头
 Nozzle Heads

实心锥喷嘴
 Full Cone Nozzles

空心锥喷嘴
 Hollow Cone Nozzles

硬质合金喷嘴
 Carbide Nozzles

扁平喷嘴
 Flat Spray Nozzles

喷射喷嘴
 Smooth-Jet Nozzles

混合喷嘴
 Mixing Nozzles

拉瓦尔喷嘴
 Laval Nozzles

清洗喷嘴
 Cleaning Nozzles

喷嘴附件
 Accessories

测试中心
 Test Center

970系列模块化喷嘴 Module System Range 970

Mod. 970



两流体喷嘴/全锥形/外混型

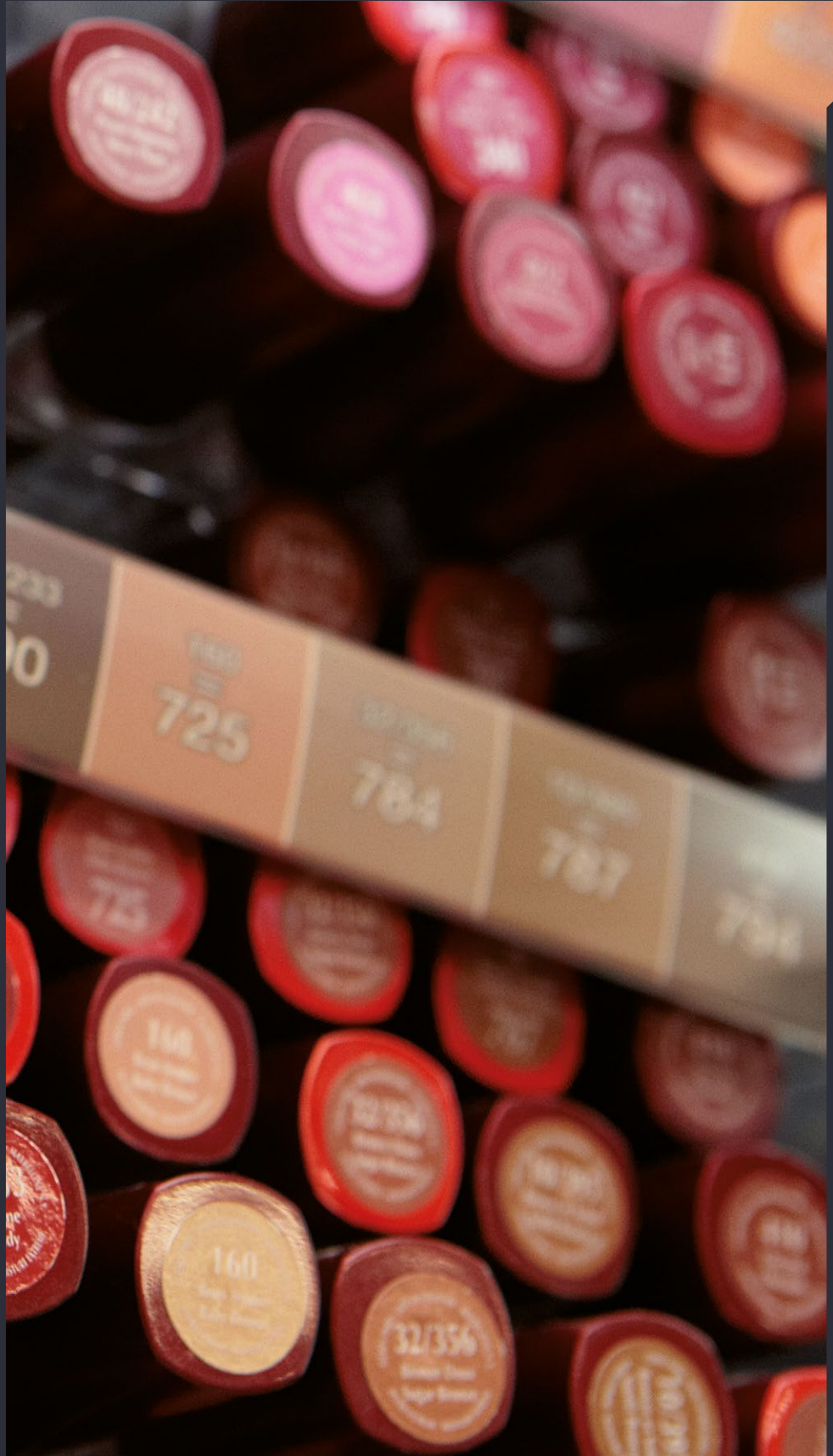
Two-Substance Nozzles / Full-Cone / External Mixing

应用

- 空气调节装置
- 包衣
- 燃烧
- 消毒
- 精整
- 流化床技术
- 制粒
- 增湿
- 定量
- 混合
- 工艺工程
- 修复
- 喷雾干燥
- 灭菌
- 烟草工业
- 疫苗

Applications

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



产品目录
Product Overview

两液体喷嘴
Two-Substance
Nozzles

防滴漏/专业包衣技术
ABC/PCA Technique

三/四液体喷嘴
Three-/Four-
Substance Nozzles

多喷头技术
Multispray

喷嘴杆
Insertion Pipes

喷嘴头
Nozzle Heads

空心锥喷嘴
Full-Cone Nozzles

空心锥喷嘴
Hollow-Cone Nozzles

硬质合金喷嘴
Carbide Nozzles

扁平喷嘴
Flat-Spray Nozzles

喷射喷嘴
Smooth-Jet Nozzles

混合喷嘴
Mixing Nozzles

拉瓦尔喷嘴
Laval Nozzles

清洗喷嘴
Cleaning Nozzles

喷嘴附件
Accessories

测试中心
Test Center

具体技术参数 Technical Details



压力或重力供液 Pressure or gravity liquid feed

喷孔直径 (mm)	雾化气压力 (bar)	雾化气的消耗量 (立方/小时)	最大处理量 (升/分钟)
Bore diameter liquid insert in mm	Atomising air pressure in bar	Atomising air consumption in Normal m ³ /h	Max. flow rate in l/min
0.5	1.0	1.30	0.017
	2.0	2.10	0.060
	3.0	2.90	0.100
	4.0	3.63	0.130
	5.0	4.36	0.180
	6.0	5.08	0.230
0.8	1.0	1.30	0.026
	2.0	2.10	0.065
	3.0	2.90	0.100
	4.0	3.63	0.150
	5.0	4.36	0.200
	6.0	5.08	0.250

970 S4喷嘴性能参数 Performance specification of model 970 S4

喷孔直径 (mm)	雾化气压力 (bar)	雾化气的消耗量 (立方/小时)	最大处理量 (升/分钟)
Bore diameter liquid insert in mm	Atomising air pressure in bar	Atomising air consumption in Normal m ³ /h	Max. flow rate in l/min
0.5	1.0	2.20	0.030
	2.0	3.40	0.100
	3.0	4.50	0.130
	4.0	6.00	0.140
	5.0	7.10	0.200
	6.0	8.40	0.230
0.8	1.0	2.20	0.040
	2.0	3.40	0.110
	3.0	4.50	0.170
	4.0	6.00	0.240
	5.0	7.10	0.300
	6.0	8.40	0.350
1.0	1.0	2.20	0.054
	2.0	3.40	0.120
	3.0	4.50	0.190
	4.0	6.00	0.280
	5.0	7.10	0.340
	6.0	8.40	0.430
1.2	1.0	2.20	0.100
	2.0	3.40	0.150
	3.0	4.50	0.230
	4.0	6.00	0.340
	5.0	7.10	0.410
	6.0	8.40	0.500

吹气负压方式供液 Liquid feed through injection

喷孔直径 (mm)	雾化气的消耗量 (立方/小时)	不同高度下的液体最大流量 升/分钟 (高度单位mm)			推荐风帽位置
		50	150	300	
Atomising air pressure in bar	Atomising air consumption in Normal m ³ /h	Max. inlet flow in ml/min at inlet height of, inlet height in mm			Best air cap setting
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
0.3	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

压力大于3 bar(G)时没有注入效应
所有数据以16°的水为例
There is no injection effect for pressures more than 3 bar (g).
Values are referred to water at 16 °C.

970喷嘴的雾化 Spray Model 970



如有技术变更, 恕不另行通知。

Mod. 970

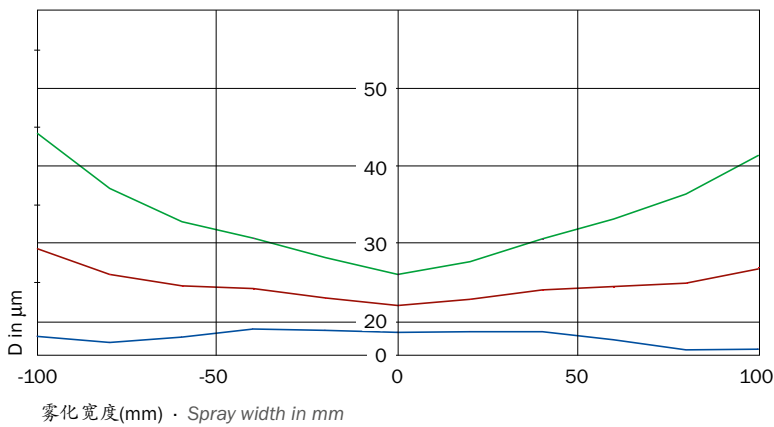
两流体喷嘴/全锥形/外混型
Two-Substance Nozzles / Full-Cone / External Mixing

相位多普勒测量技术
-雾化效果可测量

SCHLICK测量系统采用双相位激光多普勒测试原理(5瓦氩离子激光器),能精准测量雾化液滴参数和其流体特性

PDA measurement technology –
measurable success

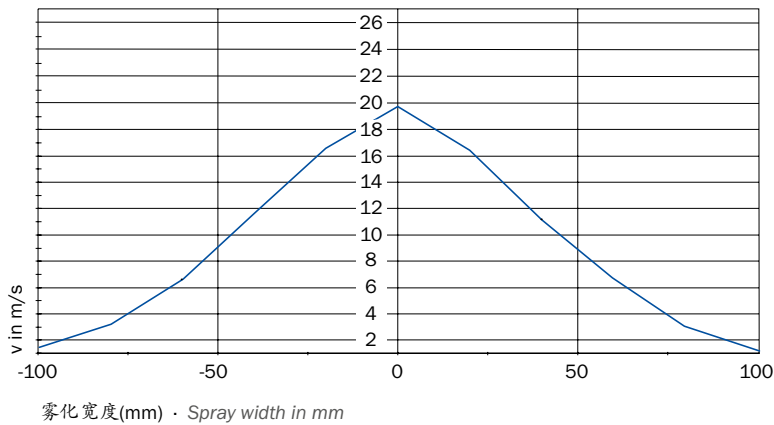
SCHLICK uses a drop measurement device designed according to the dual PDA principle (Phase-Doppler Anemometry), with a 5-watt (argon-ionic) continuous wave laser.



970 S4型喷嘴的雾化的液滴大
 喷嘴孔径 1.4mm, 雾化宽度
 距离: 200mm, 液体流量10升/小时
 雾化空气消耗量: 4.95立方/小时
 雾化空气压力: 3bar

Droplet size of Mod. 970 S4

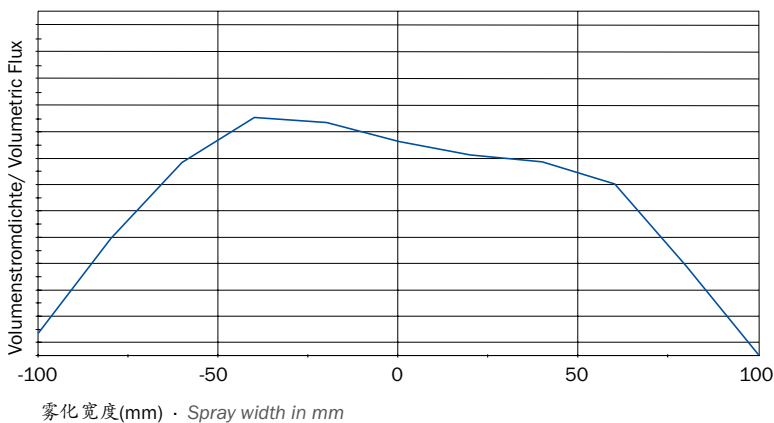
Bore diameter: 1.4 mm, spray width: 200 mm,
 distance: 200 mm, liquid throughput: 10 l/h,
 atomization air consumption: 4.95 Nm³/h,
 atomization air pressure: 3.0 bar (g)



970 S4型喷嘴的雾化速度
 喷嘴孔径 1.4mm, 雾化宽度
 距离: 200mm, 液体流量10升/小时
 雾化空气消耗量: 4.95立方/小时
 雾化空气压力: 3bar

Velocities of Model 970 S4

Bore diameter: 1.4 mm, spray width: 200 mm,
 distance: 200 mm, liquid throughput: 10 l/h,
 atomization air consumption: 4.95 Nm³/h,
 atomization air pressure: 3.0 bar (g)



970 S4型喷嘴的雾化体积密度
 喷嘴孔径 1.4mm, 雾化宽度
 距离: 200mm, 液体流量10升/小时
 雾化空气消耗量: 4.95立方/小时
 雾化空气压力: 3bar

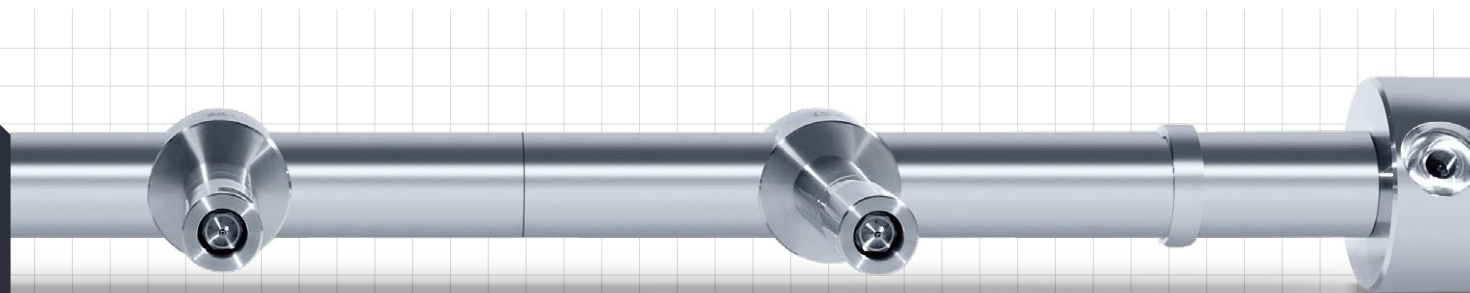
Volume density of Mod. 970 S4

Bore diameter: 1.4 mm, spray width: 200 mm,
 distance: 200 mm, liquid throughput: 10 l/h,
 atomization air consumption: 4.95 Nm³/h,
 atomization air pressure: 3.0 bar (g)

客户定制设计 Customized Designs

Mod. 970

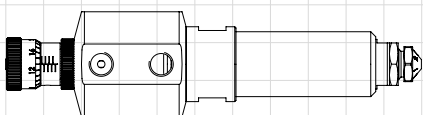
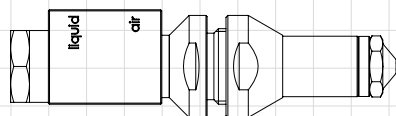
两流体喷嘴/全锥形/外混型
Two-Substance Nozzles / Full-Cone / External Mixing



Mod. 970 S116

可安装多个两流体喷嘴的安装杆，包括一个保护壳

Supply unit for several two-substance nozzles, including a protective cover.



Mod. 970 Form 5 S72

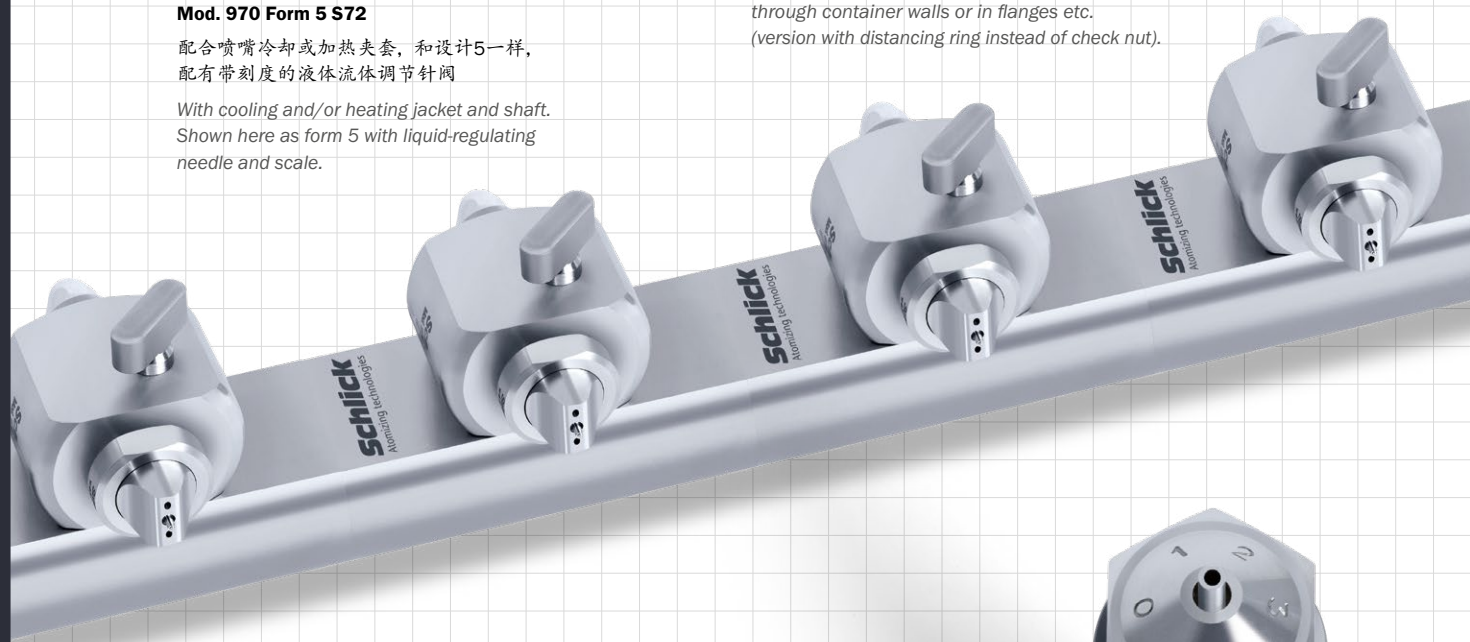
配合喷嘴冷却或加热夹套，和设计5一样，配有带刻度的液体流体调节针阀

With cooling and/or heating jacket and shaft. Shown here as form 5 with liquid-regulating needle and scale.

Mod. 970 Form 0 S3

通过螺纹连接固定杆或者直接固定在设备内壁或者法兰上(采用距离垫片代替了防松螺母，风帽位置，更光滑)

With shaft and screw thread for installation through container walls or in flanges etc. (version with distancing ring instead of check nut).



Mod. 970 Form 7-1 S89, PCA

得益于SCHLICK 专利技术，实验型连续包衣专业喷杆，可以根据客户要求数量安装喷嘴。

Lab-scale PCA (Professional Coating Arm). Spraying arm in block construction with variable number of individual nozzles. With patented SCHLICK ABC-Technology® as standard (see also "SCHLICK ABC-Technology®").

Mod. 970 S23

采用尾部中间进液的两流体喷嘴

Two-substance nozzle with rear media attachments; for a central inlet e.g. through axes.





客户小批量定制

作为一家全球领先的喷嘴制造商，SCHLICK一直为客户提供高水平的标准解决方案。

当然，凭借高精度的制造能力以及丰富的研发经验，SCHLICK也可以根据客户特殊要求，进行设计开发。

即使需要量少，交期紧。

Custom and individual designs, small series

As a leading nozzle manufacturer, high quality standardised solutions are business-as-usual for SCHLICK.

However, thanks to the breath of its manufacturing capacities and comprehensive expertise, SCHLICK can also produce custom and individual designs for specific applications.

No matter how small the series or short the timeframe.

产品目录
Product Overview

两液体喷嘴
Two-Substance
Nozzles

防滴漏/专业包浆技术
ABC/PCA Technique

三/四液体喷嘴
Three-/Four-
Substance Nozzles

多头技术
Multispray

喷嘴杆
Insertion Pipes

喷嘴头
Nozzle Heads

实心锥喷嘴
Full Cone Nozzles

空心锥喷嘴
Hollow Cone Nozzles

硬质合金喷嘴
Carbide Nozzles

扁平喷嘴
Flat Spray Nozzles

喷射喷嘴
Smooth-Jet Nozzles

混合喷嘴
Mixing Nozzles

拉瓦尔喷嘴
Laval Nozzles

清洗喷嘴
Cleaning Nozzles

喷嘴附件
Accessories

测试中心
Test Center