

Schlick Series 118, 202, 432 Carbide Nozzles with Hollow-Cone Spray Pattern



Applications:

Atomisation of abrasive media

Spray drying of:

- Ceramic bulk
- Chemicals
- Eggs
- Extracts
- Foodstuffs
- Milk
- Paints
- Soaps
- Washing powder

Schlick carbide nozzles

Hollow-cone nozzles

- Carbide nozzles with a hollow-cone spray angle atomise liquids under pressure into finest droplets having a large specific surface.
- The liquid is fed to the nozzle under pressure and enters the swirl chamber through tangential slits or holes. In the swirl chamber the energy in the pressurised liquid is converted into rotational or kinetic energy.
- A centrifugal film of rotating liquid forms a hollow cone and after overcoming surface tension the cone disperses into a myriad of fine droplets.
- The quality of the atomised spray and the droplet spectrum are related to the diameter of the orifice, pressure, spray angle, density, viscosity, and surface tension.

Features/advantages

- The orifice insert, swirl chamber and core are made of carbide or silicon carbide.
- Carbide nozzles are specially suited to the atomisation of abrasive media at low and high pressures.
- The carbide orifice inserts are quickly and easily changed to vary the flow rate and spray angle. This allows the nozzles to be swiftly adapted to customer-specific requirements.
- Because of the large channels and orifices there is little danger of clogging.
- If fine atomisation is required then high liquid pressure, low viscosity and surface tension, a small orifice and a large spray angle is essential.
- We assure reliability by 150 bar.

Nozzle designs

Model 118 – Hollow-cone nozzle with carbide insert

Especially fine hollow cone atomisation

Orifice insert and swirl chamber of carbide
(ground or not ground)

Orifice diameter 0.5-6.0 mm; in steps of 0.1 mm

Unified socket → many variants possible, including different spray angles, by changing the insert

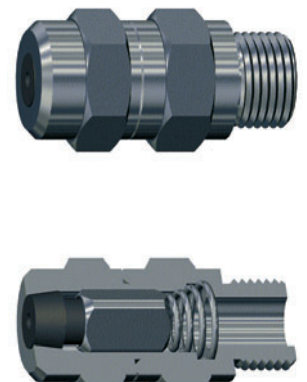


Fig. 08001

Model 202 – Hollow-cone nozzle with carbide insert

Orifice diameter 0.5-4.2 mm; in steps of 0.1 mm

Standard spray angle 75°,

but 15°, 30°, 45°, 60°, 90° also available

Flow rate comparable with Model 100/200 hollow-cone nozzles

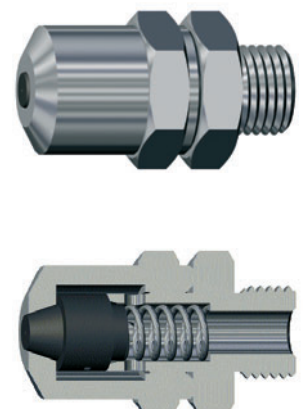


Fig. 08002

Nozzle designs

Model 432 – Hollow-cone nozzle with carbide insert

Standard design for spray drying
Orifice insert and swirl chamber of carbide
(ground or not ground)
Orifice diameter 0.5-6.0 mm; in steps of 0.1 mm
Especially high flow rate achieved by using two tangential boreholes in the swirl chamber

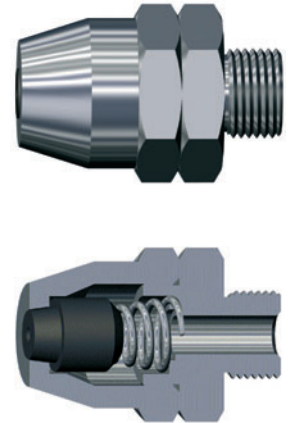


Fig. 08003

Model 432-R – Hollow-cone nozzle with carbide insert

For right-angled installation
For passing through pipes, pipe connectors, etc.
Minimum nominal diameter DN 50



Fig. 08004

Custom versions

Model 118 S3 – Hollow-cone nozzle

With supplementary air
Using supplementary air allows droplet size to be influenced



Fig. 08005

Materials

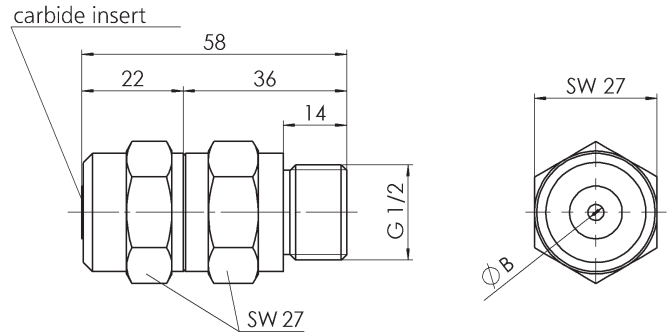
Nozzle body
- Acid resistant and non-corrosive stainless steel
- Brass
- Heat resistant stainless steel
- HASTELLOY

Orifice insert, swirl insert and chamber
- Carbide

Custom products from other materials available on request

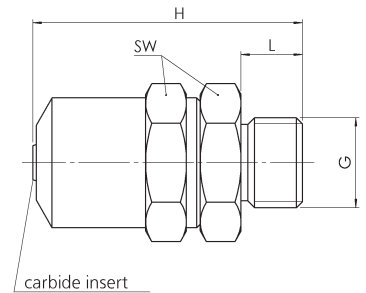
Dimensions

Model 118 – Hollow-cone nozzle with carbide insert

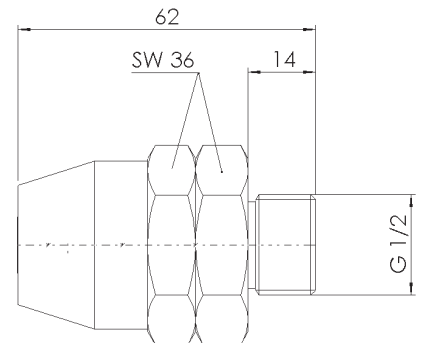


Model 202 – Hollow-cone nozzle with carbide insert

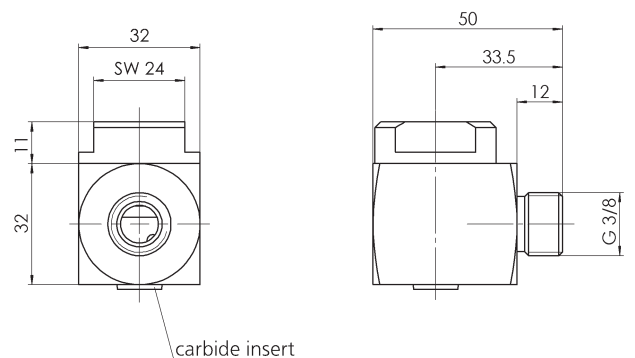
Size		1	2
Connector	G ISO 228	1/4	3/8
Thread length	L	9	11
Total height	H	45	55
Spanner size	SW	20	24
Orifice	in mm	0.5 – 2.3	2.5 – 4.2



Model 432 – Hollow-cone nozzle with carbide insert



Model 432-R – Hollow-cone nozzle with carbide insert



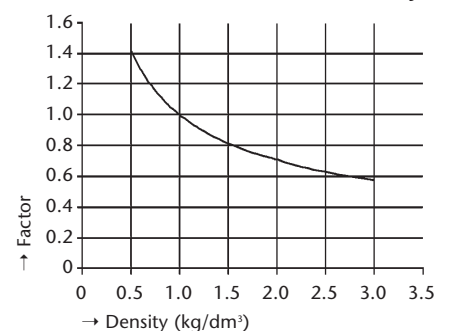
Performance specification

Model 118 – Hollow-cone nozzle

Orifice dia. in mm	Swirl insert No.	Flow rate in l/min at								Orifice spray angle
		3 bar	8 bar	10 bar	20 bar	40 bar	60 bar	80 bar	100 bar	
2.0	150	1.13	1.83	2.05	2.90	4.10	5.00	5.80	6.50	86°
	200	1.37	2.27	2.50	3.60	5.05	6.20	7.20	8.00	74°
	250	1.62	2.60	2.80	4.15	5.90	7.20	8.30	9.30	70°
	300	1.86	3.00	3.40	4.80	6.80	8.40	9.60	10.70	66°
	350	2.10	3.40	3.80	5.40	7.70	9.50	11.00	12.20	63°
	400	2.35	3.80	4.25	6.10	8.60	10.50	12.10	13.50	53°
	450	2.60	4.25	4.75	6.80	9.50	11.60	13.50	15.00	45°
2.5	150	1.42	2.30	2.60	3.70	5.20	6.40	7.30	8.20	92°
	200	1.84	3.00	3.35	4.75	6.70	8.30	9.50	10.50	82°
	250	2.24	3.65	4.10	5.80	8.20	10.00	11.50	13.00	75°
	300	2.65	4.35	4.90	6.90	9.70	12.00	13.80	15.40	72°
	350	3.05	5.00	5.60	8.00	11.10	13.60	15.70	17.50	69°
	400	3.45	5.70	6.40	9.00	12.60	15.50	18.00	20.00	60°
	450	3.85	6.40	7.00	10.00	14.00	17.30	20.00	22.00	54°
3.0	150	1.60	2.65	2.95	4.20	5.90	7.20	8.30	9.30	100°
	200	2.18	3.55	4.00	5.60	7.90	9.70	11.20	12.50	88°
	250	2.74	4.50	5.00	7.10	9.90	12.20	14.10	15.80	82°
	300	3.30	5.40	6.00	8.50	12.00	14.90	17.00	19.00	78°
	350	3.85	6.30	7.00	9.90	14.00	17.20	20.00	22.00	75°
	400	4.40	7.20	8.00	11.40	16.00	20.00	23.00	25.50	65°
	450	5.00	8.10	9.00	12.70	18.10	22.50	26.00	29.00	58°
3.5	150	1.82	3.00	3.50	4.70	6.60	8.20	9.50	10.50	103°
	200	2.55	4.15	4.60	6.50	9.30	11.40	13.20	14.70	94°
	250	3.30	5.40	6.00	8.50	12.10	15.00	17.00	19.00	85°
	300	4.00	6.60	7.40	10.40	14.80	18.00	20.80	23.00	80°
	350	4.70	7.80	8.70	12.30	17.50	21.50	24.80	27.50	77°
	400	5.45	9.00	10.00	14.00	20.00	24.80	28.50	31.50	69°
	450	6.20	10.20	11.40	16.00	23.00	28.00	32.00	36.00	67°
4.0	150	1.95	3.20	3.60	5.00	7.10	8.70	10.00	11.30	110°
	200	2.85	4.65	5.20	7.40	10.50	13.00	15.00	16.60	96°
	250	3.75	6.20	6.90	9.80	14.00	17.00	19.60	22.00	88°
	300	4.70	7.60	8.60	12.00	17.00	21.00	24.30	27.00	84°
	350	5.60	9.20	10.20	14.40	20.40	25.00	29.00	32.50	79°
	400	6.50	10.60	11.90	16.60	23.70	29.00	34.00	37.50	73°
	450	7.50	12.10	13.60	18.90	27.00	33.00	38.00	43.00	67°
4.5	150	2.30	3.80	4.25	6.00	8.40	10.40	12.00	13.40	112°
	200	3.35	5.50	6.20	8.70	12.30	15.20	17.50	19.50	98°
	250	4.40	7.30	8.00	11.50	16.20	20.00	23.00	25.50	91°
	300	5.50	9.00	10.00	14.30	20.00	25.00	28.70	32.00	87°
	350	6.60	10.70	12.00	17.00	24.00	29.50	34.00	38.00	83°
	400	7.60	12.50	14.00	19.50	28.00	34.00	40.00	44.00	76°
	450	8.60	14.00	16.00	22.00	31.50	38.50	45.00	50.00	70°
5.0	150	2.60	4.25	4.75	6.70	9.50	11.60	13.50	15.00	104°
	200	3.80	6.30	7.10	10.00	14.00	17.50	20.00	22.50	97°
	250	5.10	8.40	9.40	13.00	18.70	23.00	26.80	30.00	92°
	300	6.40	10.50	11.60	16.30	23.30	28.50	33.00	37.00	88°
	350	7.60	12.40	13.90	19.50	27.80	34.00	39.50	44.00	87°
	400	8.90	14.50	16.00	23.00	32.00	39.50	46.00	52.00	80°
	450	10.20	16.50	18.40	26.00	37.00	46.00	53.00	58.00	76°
500	11.40	18.50	21.00	29.00	42.00	51.00	59.00	66.00	70°	

- Flow referred to water at 16 °C.
- Flow rates differ for liquids of densities deviating from that of water.
- Use the conversion factors on the right to determine flow rates.
- To convert the flow rate, simply multiply the value referring to water from the table above by the respective conversion factor.
- The influence of viscosity cannot be calculated. The flow rate must be determined experimentally for values differing largely from water.
- Orifice diameters are given in 1/10 mm on the individual nozzles.

Conversion factor for density



Performance specification

Model 432 – Hollow-cone nozzles

Orifice dia. in mm	Swirl chamber No.	Flow rate in l/min at								Orifice spray angle
		3 bar	8 bar	10 bar	20 bar	40 bar	60 bar	80 bar	100 bar	
2.0	150	0.85	1.40	1.55	2.20	3.10	3.80	4.40	5.00	84°
	200	1.15	1.90	2.10	2.95	4.20	5.10	5.90	6.60	80°
	250	1.40	2.30	2.55	3.60	5.10	6.30	7.30	8.10	74°
	300	1.65	2.70	3.00	4.20	6.00	7.40	8.60	9.50	69°
	350	1.95	3.15	3.50	5.00	7.00	8.50	10.00	11.20	64°
	400	2.30	3.75	4.20	6.00	8.40	10.40	12.00	13.20	50°
	450	2.65	4.35	4.90	7.00	9.80	12.00	14.00	15.50	46°
500	3.20	5.30	5.90	8.40	11.80	14.50	16.50	18.50	40°	
2.5	150	1.05	1.70	1.90	2.70	3.80	4.70	5.40	6.10	86°
	200	1.35	2.20	2.45	3.50	5.00	6.10	7.00	7.80	83°
	250	1.75	2.85	3.20	4.50	6.40	7.80	9.00	10.00	76°
	300	2.10	3.40	3.80	5.40	7.70	9.40	11.00	12.00	74°
	350	2.50	4.20	4.70	6.70	9.50	11.70	13.50	15.00	66°
	400	3.10	5.10	5.60	8.00	11.30	14.00	16.00	17.80	57°
	450	3.65	6.00	6.70	9.50	13.40	16.00	19.00	21.00	52°
500	4.50	7.40	8.20	11.50	16.40	20.00	23.20	26.00	47°	
3.0	150	1.20	1.95	2.20	3.10	4.40	5.40	6.20	7.00	96°
	200	1.60	2.65	2.95	4.15	5.80	7.20	8.20	9.20	93°
	250	2.10	3.50	3.85	5.40	7.60	9.40	10.80	12.00	83°
	300	2.55	4.20	4.70	6.60	9.20	11.40	13.10	14.60	80°
	350	3.10	5.10	5.70	8.00	11.30	14.00	16.00	17.90	75°
	400	3.85	6.40	7.10	10.00	14.20	17.50	20.00	22.50	63°
	450	4.60	7.50	8.40	11.80	16.90	20.70	23.90	26.50	60°
500	5.80	9.40	10.50	14.60	21.00	26.00	30.00	33.00	53°	
3.5	150	1.40	2.30	2.60	3.60	5.10	6.30	7.30	8.10	101°
	200	1.85	3.00	3.35	4.75	6.80	8.30	9.60	10.50	95°
	250	2.45	4.00	4.45	6.30	8.90	11.00	12.60	14.00	92°
	300	3.00	5.00	5.50	7.80	11.00	13.50	15.50	17.30	86°
	350	3.80	6.20	7.00	9.80	14.00	17.00	19.50	22.00	80°
	400	4.75	7.80	8.70	12.30	17.50	21.50	24.70	27.50	73°
	450	5.70	9.20	10.30	14.50	20.80	25.40	29.50	32.50	66°
500	7.00	11.50	12.90	18.00	26.00	31.50	36.50	41.00	58°	
4.0	150	1.55	2.50	2.80	4.00	5.60	7.00	8.00	9.00	105°
	200	2.10	3.40	3.80	5.40	7.70	9.40	11.00	12.00	98°
	250	2.80	4.60	5.10	7.20	10.20	12.50	14.50	16.00	95°
	300	3.50	5.70	6.40	9.00	12.80	15.80	18.50	20.00	92°
	350	4.25	7.00	7.80	11.00	15.70	19.00	22.00	24.50	87°
	400	5.40	8.80	9.80	14.00	19.50	24.50	28.00	31.50	77°
	450	6.60	10.80	12.00	16.80	24.00	29.80	34.00	38.00	70°
500	8.30	13.50	15.00	21.00	30.50	37.00	43.00	48.00	63°	
4.5	150	1.70	2.80	3.10	4.40	6.30	7.70	8.80	9.80	104°
	200	2.30	3.80	4.30	6.00	8.50	10.40	12.00	13.25	100°
	250	3.15	5.20	5.40	8.20	11.50	14.00	16.20	18.00	97°
	300	4.00	6.60	7.40	10.30	14.50	18.00	20.70	23.00	94°
	350	4.85	8.00	8.90	12.50	17.50	22.00	25.50	28.00	87°
	400	6.20	10.00	11.30	15.70	22.80	28.00	32.00	36.00	78°
	450	7.60	12.40	13.80	19.50	28.00	34.50	40.00	44.00	72°
500	9.60	15.50	17.50	24.50	35.00	43.00	50.00	56.00	67°	
5.0	150	1.85	3.00	3.90	4.80	6.80	8.30	9.50	10.60	107°
	200	2.50	4.10	4.60	6.40	9.10	11.20	13.00	15.40	102°
	250	3.40	5.60	6.20	8.70	12.40	15.20	17.50	19.50	97°
	300	4.30	7.00	7.90	11.00	15.80	19.50	22.50	25.00	93°
	350	5.40	8.80	9.80	13.70	20.00	24.50	28.00	31.50	89°
	400	7.00	11.50	12.90	18.00	26.00	32.00	37.00	41.00	87°
	450	8.60	14.00	15.90	22.00	32.00	39.00	45.00	50.00	78°
500	10.80	18.00	20.00	28.00	39.50	48.50	56.50	63.00	72°	

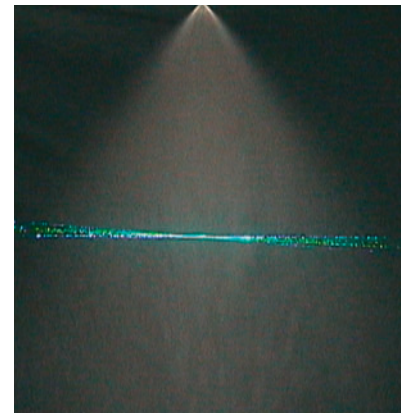
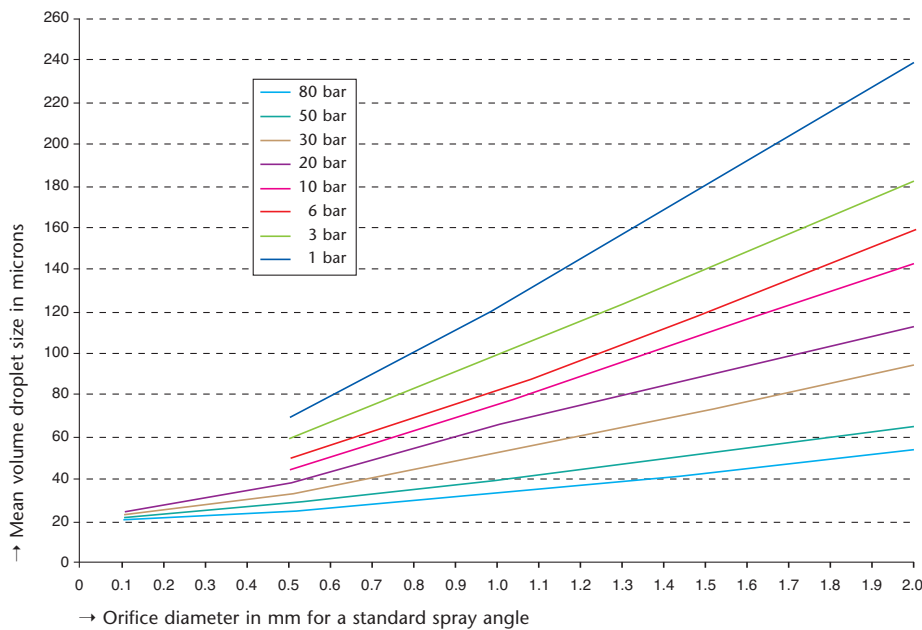
- Flow referred to water at 16 °C.
- See conversion factor on page 5 for liquids of other densities.
- Orifice diameters are given in 1/10 mm on the individual nozzles.

Performance specification

Model 202 – Hollow-cone nozzle

Orifice dia. in mm	Flow rate in l/min at								
	0.25 bar	0.5 bar	1 bar	2 bar	3 bar	4 bar	6 bar	8 bar	10 bar
0.5				0.080	0.097	0.111	0.138	0.159	0.178
0.8				0.204	0.250	0.288	0.354	0.408	0.457
1.1			0.270	0.380	0.470	0.540	0.660	0.770	0.860
1.6		0.41	0.580	0.81	1.00	1.16	1.43	1.64	1.83
2.3	0.60	0.84	1.19	1.68	2.06	2.38	2.92	3.37	3.76
2.8	0.88	1.24	1.76	2.48	3.05	3.52	4.32	4.98	5.57
3.2	1.15	1.63	2.30	3.26	4.00	4.62	5.65	6.52	7.30
3.6	1.45	2.06	2.92	4.12	5.05	5.83	7.15	8.25	9.20
3.9	1.70	2.41	3.40	4.80	5.90	6.82	8.35	9.63	10.75
4.2	1.98	2.82	3.98	5.63	6.90	7.95	9.75	11.30	12.60

Droplet size – spray pattern



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.



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