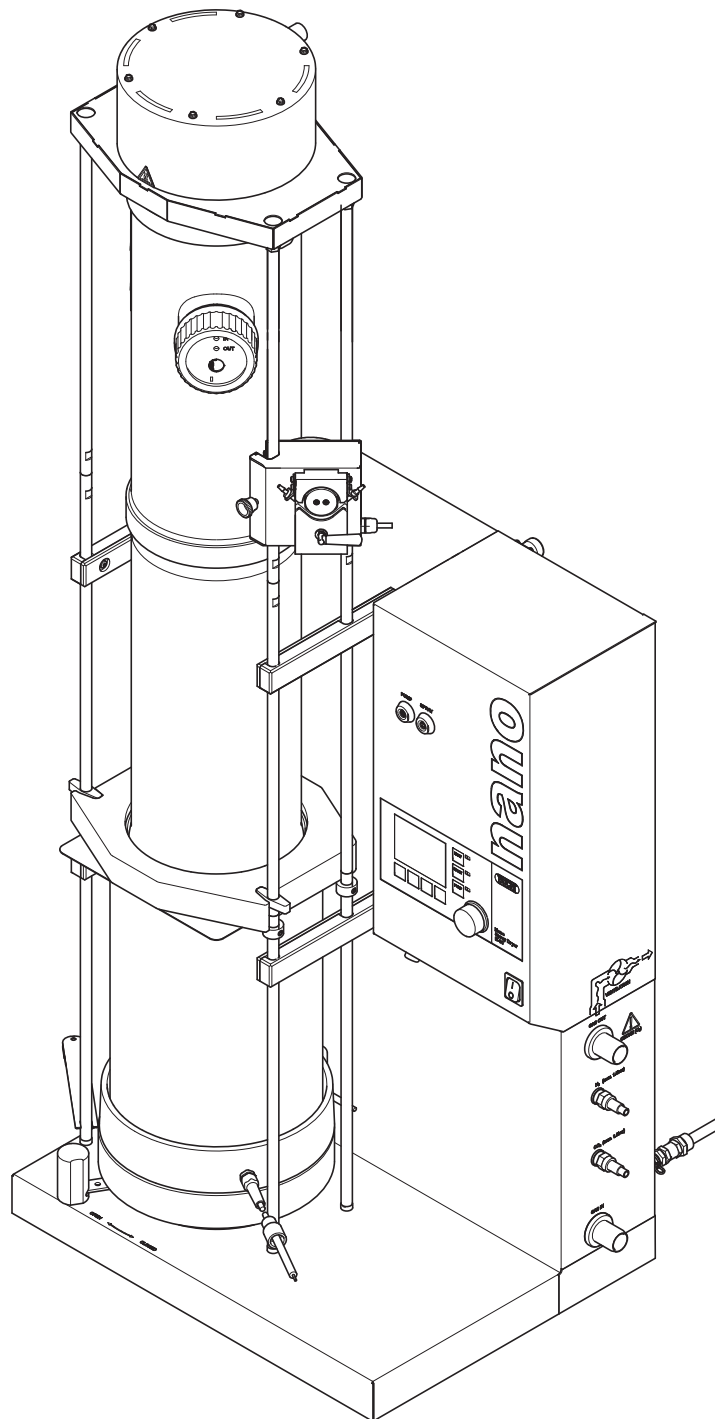




Nanp Spray Dryer B-90 HP

Technical data sheet

Gently processing of small sample amounts into sub-micron particles with little loss are the key features characterizing the Nano Spray Dryer B-90 HP. The 2nd generation instrument offers enhanced productivity and a better handling. It enables applications in the pharmaceutical industry, in life- and material sciences- whenever small particles make the difference.



Scope of delivery

Components	Nano Spray Dryer	
	B-90 HP Basic	B-90 HP Advanced
Heating cpl.	1	1
Holder spray head	1	1
Spraying head	1	1
Lifting device B-90 HP	1	1
HV-elektrode protected	1	1
Peristaltic pump cpl.	1	1
Set nebulizer "small" (3 pcs)	1	1
Set nebulizer "medium" (3 pcs)	1	1
Set nebulizer "large" (3 pcs)	1	1
Adapter gas inlet	1	1
Spray cylinder	1	1
Glass cylinder	1	1
Glass insulation tube	1	1
Particle collection electrode	1	1
Temperature probe PT1000	2	2
Nano Spray Dryer B-90 HP CD	1	1
Separator base complete	1	1
Set feed adapters	1	1
Inlet and used drying gas hose	1	1
Tools B-90 HP	1	1
Sample holder	1	1
Particle scraper	1	1
Particle collection paper	1	1
Set gaskets and o-rings	1	1
Set Cleaning tool	1	1
Hose silicone	4 m	4 m
Hose Tygon MH2075	-	1 m
Hose Tygon HCF4040A	-	1 m
Oxygen sensor	-	1
N ₂ and CO ₂ valves	-	1

Instrument Variants

	Organic sam- ples	Aqueous samples	Mixtures
Nano Spray Dryer B-90 HP basic, 100 – 240 V / 50 – 60 Hz		•	
Nano Spray Dryer B-90 HP advanced, 100 – 240 V / 50 – 60 Hz	•	•	•
Inert Loop S-395 200 V / 50 Hz	•		•
Inert Loop S-395 220 - 240 V / 50 Hz	•		•
Inert Loop S-395 200 V / 60 Hz	•		•
Inert Loop S-395 220 V / 60 Hz	•		•
Inert Loop S-395 240 V / 60 Hz	•		•
Dehumidifier S-396 Nano, 200 V / 50 – 60 Hz		•	•
Dehumidifier S-396 Nano, 210 V / 50 – 60 Hz		•	•
Dehumidifier S-396 Nano, 220 V / 50 – 60 Hz		•	•
Dehumidifier S-396 Nano, 230 V / 50 – 60 Hz		•	•
Dehumidifier S-396 Nano, 240 V / 50 – 60 Hz		•	•
Aspirator with Inlet Filter	•	•	•

Order code

Choose the configuration according to your needs:

1 1 0 5 5 3 2

Nano Spray Dryer B-90 HP

0 basic, 100 – 240 V / 50 – 60 Hz

1 advanced, 100 – 240 V / 50 – 60 Hz

Technical data

Nano Spray Dryer B-90 HP

Specification	Nano Spray Dryer B-90 HP
Dimensions (W x D x H)	70.5 x 66.0 x 68.7 mm
Weight	91.0 - 96.7 kg
Power consumption	1700 - 2000 VA
Fuse	12 A
Connection voltage	100 - 230 ± 10% VAC
Frequency	50 / 60 Hz
Heating capacity	1400 W
Overvoltage category	II
Max. temperature input	120°C

Specification	Nano Spray Dryer B-90 HP
Drying gas flow	80 – 160 L / min
Nebulizer	small, medium, large
Evaporating capacity	0.2 L / h H ₂ O (higher for organic solvents)
Mean droplet size range	3-15 µm MMD
Possible particle diameter range	200 nm - 5 µm
Mean residence time	1 - 4 sec.
Spray frequency	80 - 140 kHz
Interface	USB II
Pollution degree	2
Air, N ₂ , CO ₂	max. 2 bar

Materials

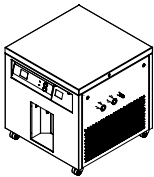
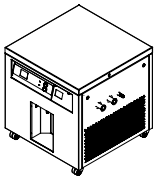
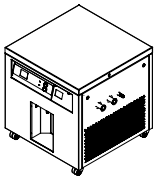
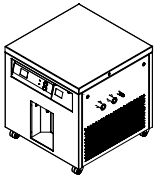
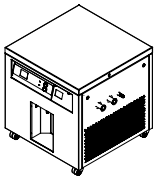
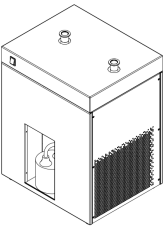
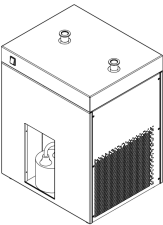
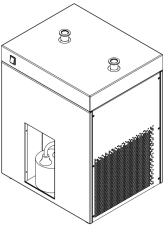
Component	Material
Glass assembly	3.3 borosilicate glass
Spray head	Stainless steel (1.4404)
Nebulizer membrane	Stainless steel (1.4401)
Reservoir Gasket	FFKM
Heater	Alluminium and stainless steel
Feeding tubes	Silicone (SIR) and Tygon® (MH2375, HCF4040A)
Tube connector at feeding tubes	PEEK
Particle collector electrode	Stainless steel (1.4435)
HV Electrode	Stainless steel (1.4310)
Sealings for spray and glass cylinder	Silicone (FP6AGS)
Polypress tube	EPDM

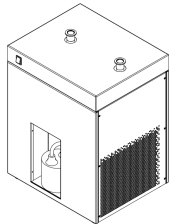
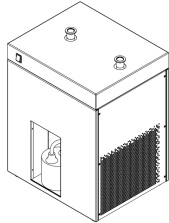
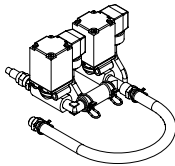
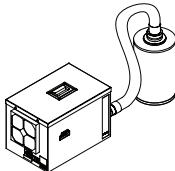
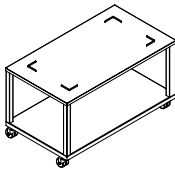
Ambient conditions

For indoor use only.

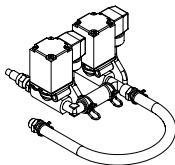
Max. altitude above sea level	2000 m
Ambient and storage temperature	5 - 40°C (25°C)
Maximum relative humidity	maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 67% relative humidity at 35°C

Accessories

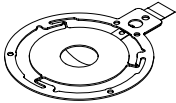
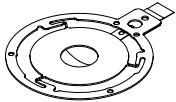
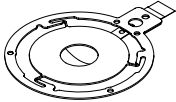
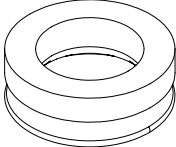
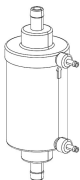
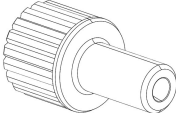
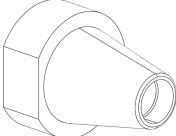
	Order no.	Image
Inert Loop S-395 200V 50Hz	11074620	
Inert Loop S-395 220-240V 50Hz	11074621	
Inert Loop S-395 200V 60Hz	11074622	
Inert Loop S-395 240V 60Hz	11074623	
Inert Loop S-395 220V 60Hz	11075174	
Dehumidifier S-396 Nano (50 / 60 Hz, 230 V)	11073819	
Dehumidifier S-396 Nano (50 / 60 Hz, 240 V)	11073820	
Dehumidifier S-396 Nano (50 / 60 Hz, 210 V)	11073821	

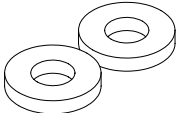
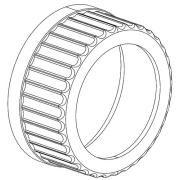
	Order no.	Image
Dehumidifier S-396 Nano (50 / 60 Hz, 200 V)	11073822	
Dehumidifier S-396 Nano (50 / 60 Hz, 220 V)	11074007	
Upgrade Set Nano Spray Dryer B-90 HP Basic to Advanced Upgrade set for the Nano Spray Dryer B-90 HP Basic to be prepared for organic solvent operation in closed loop with the Inert Loop S-395 or the Dehumidifier S-396 Nano.	11055748	
Aspirator with Inlet Filter Corrosion resistant aspirator to generate the drying gas in open mode or to recirculate the inert gas in closed mode. Glass fiber filter to prevent contamination of inlet air by any kind of particles from the environment.	11055325	
Compressed air maintenance unit	004366	
Trolley Stainless steel trolley with extra space.	041257	
Kit Customer B-90 HP Frequently used wear and spare parts for self-servicing your device, conveniently gathered in one kit	11062627	

Service and maintenance kits

Specification	Order no.	Image
Kit Customer B-90 HP Frequently used wear and spare parts for self-servicing your device, conveniently gathered in one kit	11062627	
Upgrade kit for B-90 to B-90 HP	11064116	
Upgrade Set Nano Spray Dryer B-90 HP Basic to Advanced Upgrade set for the Nano Spray Dryer B-90 HP Basic to be prepared for organic solvent operation in closed loop with the Inert Loop S-395 or the Dehumidifier S-396 Nano.	11055748	

Spare parts

Specification	Order no.	Image
Spray head holder	11065359	
Nebulizer set small (3 pcs)	11064560	
Nebulizer set medium (3 pcs)	11064561	
Nebulizer set large (3 pcs)	11064562	
Reservoir Gasket set (2 pcs)	11064742	
Visor Gasket set (2 pcs)	11064741	
Feed Capillary set (4 pcs)	11064740	
Outlet Filter	051656	
Silicon tube D2/4 (per m)	004138	
Tygon tube MH2375 transparent (per m)	046314	
Tygon tube F 4040 A yellow (per m)	046315	
UNF-28 Fitting, 1/16", grey 25 pcs	044816	
UNF-28 Ferrule, 1/16", grey 25 pcs	044269	

Specification	Order no.	Image
Seals, set. 10 pcs, for hose barbs GL14, silicone, red	040023	
Connecting screw cap GLS 80	051518	
Closing screw cap GLS 80	051529	

Description of function

Step 1 - Heating:

Heat the inlet air to the desired temperature (max. 120 °C)

Step 2 - Droplet formation:

Ultrasonic nebulizer

Step 3 - Drying chamber:

Conductive heat exchange between drying gas and sample droplets.

Step 4 - Particle collection:

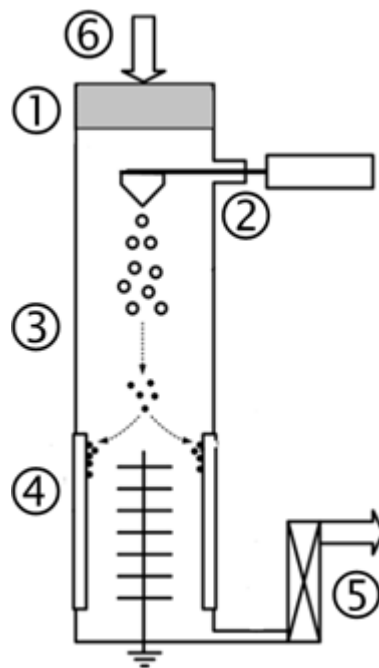
Electrostatic particle collector

Step 5 - Outlet filter:

Collection of finest particles to protect the user and the environment.

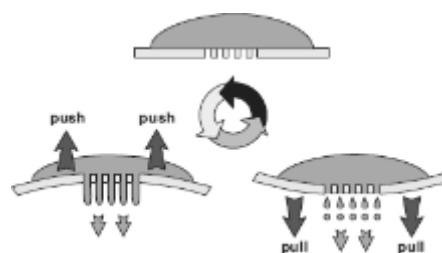
Step 6 - Drying gas:

Delivered by aspirator or compressed air



Description of function of the spray head

The nebulizer unit includes a piezoelectric actuator with a thin stainless steel membrane. The membrane has an array of micron-sized holes, vibrating at ultrasonic frequencies (80-140 kHz), thus ejecting a large amount of precisely sized microdroplets at high speed.



Description of function of the electrostatic particle collector

Solid particles are accumulated at the wall of the cylindrical particle collecting electrode by a strong electrical field.

