

Concept Smoke Systems

Pure Water Fogger AFM Apollo Series



Background of application:

Cleanrooms are dynamic systems. People and goods are constantly in motion. Installations, production lines and machines do require periodical adjustment to the production of different products.



According to the relevant standard ISO 14644-3 the operators of cleanrooms are obliged to periodically give evidence of the institute airflow situation by an airflow mapping supported by high purity airflow mappers.



The AFM-NEO cleanroom foggers use high performance transonic piezoelectric ceramics to generate what is considered in its class an unmatched fog output, using up to 866ml of fog density per minute to provide 10-14m of visible air flows for smoke studies in cleanrooms, medical rooms, ISO suits, barrier isolators, fume hoods and similar applications in cleanrooms.



Fog output characteristics:

- Dense white pure fog
- Cycle time of up to 90 minutes
- Sufficient volume of fog to split output with Y-Splitter, providing two hoses of pure white fog simultaneously
- Atomizing up to 866ml of DI Water per minute into 6,4m³ of pure white fog
- 10-14mtr of visible airflows

Particle Size Range	Percentage
< 0.3 µm	28% of generated droplets
0.3 µm – 0.5 µm	72%
0.5 µm – 1.0 µm	0%
1.0 µm – 5.0 µm	0%
5.0 µm	0%

Typical Applications:

- Airflow recovery tested (ISO 14644-3 Annex B12)
- Airflow visualisation tests (ISO 14644-3 Annex B7)
- USP 797 in-situ airflow analysis
- USP 800 compound pharmacy airflow tests
- Airflow tests for NSF 49 and bio-safety cabinets
- Airflow requirements using semiconductor clean-room guidelines, FS 209E
- Containment transport studies on process tools
- Optimisation of equipment locations
- Tracing routes of air infiltration in cleanrooms
- Pressure balancing
- Operator training



Demonstration Video



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AP35-3 (LN2)	AP100-3 (LN2)
	
<p>Key Features:</p> <ul style="list-style-type: none"> Single (optional double) Ø 80 mm fog outlet port 9 L WFI-water tank and 35 L LN2 double-wall dewar Dual heating system with 2 built-in heating coils Control unit, water tank, and dewar made of stainless steel Stainless steel carriage with 4 castors and protective transport frame (semi-circular demountable housing) One fog rake (Ø 80 x 650 mm) with outlet direction nozzles One 5 m flexible tube with end tips (Ø 80 mm) <p>Performance Specifications:</p> <ul style="list-style-type: none"> Maximum cycle time with one filling: 47 minutes (refill water tank and exchange LN2 dewar on the fly) Generated fog volume: 8.2 m³/min (290 cft/min) Fog density per minute: 866 ml Fog characteristics: Extremely dense and paper-white fog Total fog volume per 60-minute cycle: 492 m³ Visible fog distance: 7 to 10 meters Fog type: High volume of dense, white, pure fog <p>Additional Features:</p> <ul style="list-style-type: none"> Optional remote control Pressure build-up controller and pressure reduction controller Fill level control for water tank and nitrogen dewar Pressureless system operating at only 0.3 bar (43.5 PSI) <p>Dimensions & Weight:</p> <p>121 x 59 x 88 cm (47.6 x 23.2 x 35 in)</p> <p>Power Supply:</p> <p>100-240V, 47/63 Hz</p>	<p>Key Features:</p> <ul style="list-style-type: none"> Double Ø 80 mm fog outlet ports 9 L WFI-water tank and 100 L LN2 double-wall dewar Dual heating system with 2 built-in heating coils Stainless steel construction for the control unit, water tank, and dewar Decoupled sections for the control unit and dewar, each equipped with 4 castors (two movable and two fixed), allowing independent movement Two fog rakes (Ø 80 x 650 mm) with outlet direction nozzles Two 5 m flexible tubes with end tips (Ø 80 mm) <p>Performance Specifications:</p> <ul style="list-style-type: none"> Maximum cycle time with one filling: 90 minutes (refill water tank and exchange LN2 dewar on the fly) Generated fog volume: 14 m³/min (495 cft/min) Fog density per minute: 866 ml Fog characteristics: Extremely dense and paper-white fog Total fog volume per 60-minute cycle: 840 m³ Visible fog distance: 10 to 14 meters Fog type: High volume of dense, white, pure fog <p>Additional Features:</p> <ul style="list-style-type: none"> Optional remote control Pressure build-up controller and pressure reduction controller Vacuum seal to minimize LN2 loss when not in operation Fill level control for water tank and nitrogen dewar Pressureless system operating at only 0.3 bar (43.5 PSI) Nitrogen filling hose with phase separation <p>Dimensions & Weight:</p> <p>121 x 59 x 127 cm (47.6 x 23.2 x 50 in)</p> <p>Power Supply:</p> <p>100-240V, 47/63 Hz</p>






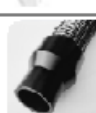







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LINE	ITEM (PICTURE)	ITEM DESCRIPTION	
3	FL650.60-STR		Ø 60 x 650 mm FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES
4	FL.1300.60-STR		Ø 60 x 1.300 mm FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES
5	FL.650.80-STR		Ø 80 x 650 mm FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES
6	FL.1300.80-STR		Ø 80 x 1.300 mm FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES
7	FL.1850.80-STR		Ø 80 x 1.850 mm FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES
8	FL.1350.80-T	 Ø 80 x 1.300 mm FOG RAKE T-PATTERN VERSION, FOG RAKE, FITTED W/OUTLET DIRECTION NOZZLES	
9	TUBE.3000.60-BS	 3 m FLEXIBLE TUBE WITH END TIPS (Ø 60 mm)	
10	EXT.TUBE.3000.60-BS	Ø 60 mm FLEXIBLE TUBE EXTENSION (PER EACH ADDITIONAL m OF LENGTH ON TOP)	
11	TUBE.3000.80-BS	3 m FLEXIBLE TUBE WITH END TIPS (Ø 80 mm)	
12	TUBE.5000.80-BS	5 m FLEXIBLE TUBE WITH END TIPS (Ø 80 mm)	
13	EXT.TUBE.3000.80-BS	Ø 80 mm FLEXIBLE TUBE EXTENSION (PER EACH ADDITIONAL m OF LENGTH ON TOP)	
14	THROTTLE.60		Ø 60 mm THROTTLE VALVE FOR A 0 TO 100 % OUTPUT ADJUSTMENT AT HOSE TIP
15	THROTTLE.80		Ø 80 mm THROTTLE VALVE FOR A 0 TO 100 % OUTPUT ADJUSTMENT AT HOSE TIP
16	OUTLET.45° (80)	 45° FLEXIBLE Ø 80 mm HOSE TO BE CONNECTED TO FOG OUTLET PORT PROVIDING A STABLE OUTPUT RIGHT ON SPOT.	
17	80.60 RED	 REDUCTION FROM 80 TO 60 mm DIAMETER (THIS REDUCTION COMES WITHOUT THROTTLE VALVE!)	
18	TUBE.CON (60)		OD 60 mm TUBE CONNECTOR COUPLING TWO HOSES
19	TUBE.CON (80)		OD 80 mm TUBE CONNECTOR COUPLING TWO HOSES
20	NOZ.350		350 mm BROAD FLAT FOG OUTPUT NOZZLE
21	NOZ.500		500 mm BROAD FLAT FOG OUTPUT NOZZLE WITH INSIDE BLADE STRUCTURE FOR A HOMOGENEOUS FOG PICTURE
22	T-SPLITTER.80-STRD	 EXTRA T-PATTERN SPLITTER FOR CONFIGURATING OF A 1.300 mm T-PATTERN FOG RAKE VERSION OF 80 mm OD (TOGETHER WITH TWO FL.650.80-STR FOG RAKE ELEMENTS)	
23	Y-SPLITTER.80-5"	 Y-PATTERN SPLITTER FOR SPLITTING ONE TO TWO HOSES ENABLING WORKING PARALLELY AT TWO VISUALIZATION SPOTS . COMING WITH SHORT HOSE CONNECTING AFM-NEO TO Y-SPLITTER.	
24	Y-SPLITTER.80-THROTTLE	 Y-PATTERN SPLITTER WITH ADDITIONAL BUTTERFLY VALVE IN EACH OUTGOING TUBE FOR SPLITTING ONE TO TWO HOSES ENABLING A 0 TO 100 % OUTPUT ADJUSTMENT AND PARALLEL WORKING AT TWO VISUALIZATION SPOTS . COMING WITH SHORT HOSE CONNECTING AFM-NEO TO Y-SPLITTER.	
25	QUAD	 1 IN 4 OUT Y-PATTERN SPLITTER FOR SPLITTING ONE TO FOUR HOSES ENABLING FOGGING PARALLELY AT FOUR VISUALIZATION SPOTS (ONLY AVAILABLE FOR AFM40-NEO AND AFM40-NEO DUAL)	
26	LED.BOOST-GEN2	 DUAL LIGHT SOURCE KIT TO ESTABLISH HIGHER CONTRAST CONSISTING OF (1) LIGHT SOURCE #1 (360 POWERFUL LEDS 0,5 W SMD 2835 COLD WHITE) ... AND (2) LIGHT SOURCE #2 (LIGHT BAR VECTOR PIXEL BAR WITH PIXEL CONTROL AND 18x15W LEDs, RGBWA COLOUR MIXING, 45° BEMA ANGLE, 10/28/90/100 DMX CHANNELS)	

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27	RC.AFM.AD		REMOTE CONTROL FOR SYSTEM FUNCTIONS ON/OFF, SWITCH & FLASH MODE, FAN UP/DOWN, 2-1 BLOCK RUN
28	IQ/OQ		IQ/OQ DOCUMENTATION
29	TRIPOD-L/F		DOUBLE TRIPOD KIT INCLUDING TWO STAINLESS STEEL FOG RAKE HOLDER PLATES WITH TWO FASTENING STRIPES COMBINED TO UP TO 4 m HIGH DOUBLE TRIPOD FOR FOG RAKE LIFTING AND POSITIONING IN UP TO 4 m OF HEIGHT IN ORDER TO CREATE AN UP TO 4 m WIDE FOG CURTAIN
30	TRIPOD-900		900 mm HIGH STAINLESS STEEL DOUBLE TRIPOD COMING WITH TWO TOP MOUNTED FOG RAKE HOLDER PLATES WITH TWO SILICONE FASTENING STRIPES
31	TRIPOD-1200		1200 mm HIGH STAINLESS STEEL DOUBLE TRIPOD COMING WITH TWO TOP MOUNTED FOG RAKE HOLDER PLATES WITH TWO SILICONE FASTENING STRIPES
32	TRIPOD-1500		1500 mm HIGH STAINLESS STEEL DOUBLE TRIPOD COMING WITH TWO TOP MOUNTED FOG RAKE HOLDER PLATES WITH TWO SILICONE FASTENING STRIPES
33	BOX.AP35-3 BOX.AP100-3		HEAVY DUTY TRANSPORT BOX FOR AP35-3 BOX.AP100-3

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