Filter Test Machine/Air Permeability Tester

FNM's filter test machines (FT150PA, FT200PO and FT200PS) can determine the efficiency, pressure drop and air permeability of different flat sheet filter media using oil / salt aerosols or atmospheric dust. Our filter test machines can be employed for testing different flat sheet media which are used to produce respiratory face masks and air filters.

Filter test machines are equipped with a high precision particle counter (four-channel particle sizes: 0.3, 0.5, 1.0 and 3.0 µm) for counting the particles generated by oil / salt particle generator or atmospheric dust in order to calculate filtration efficiency. The software calculates the aerosols penetration (P (%)) and media filtration efficiency (E (%)). Additionally, this machine can calculate air permeability and pressure drop of flat sheet media automatically.

Filter test machine uses a particle counter that counts upstream and downstream particles. Data can be saved automatically and also test reports can be printed by an installed printer on the machine.

FNM's filter test machines can measure the efficiency and pressure drop of flat sheet media according to BS EN 143, BS EN 149, BS EN 779, US 42 CFR 84, ISO 16890, ISO 16900-3, ISO 11155-1 and ISO 5011 standards.

Technical Specifications of Air Permeability Tester Machine

Specification	Acceptance Criteria
Tests	1. Pressure drop (respiratory resistance) 2. Air permeability Flat sheet with maximum area of 5 cm^2
Aeration measurement range	1…… 1666 l/m2 /s @ 2 cm2
Displayable units	l/min, CFM, l/m2/s, cm/s, ft3/ft2/s
Calibration method	Manual
Aerosol generator flow	Adjustable from 1 – 20 l/min through the panel
Design	Minimum leakage, ergonomic
Sensors	Temperature, relative humidity, pressure
Sample fixture (cm^2)	Flat sample (circular holder with area of 1, 4 and 5 cm^2)
Differential pressure sensor range (Pa)	0 – 1000 Pa
Control	PLC
User interface	HMI (7" touch screen)
Data report	Display on the HMI screen, the machine is able to print the reports (printer is optional)
Presentable information	Flow rate, temperature, relative humidity, pressure drop, air permeability
Chassis	Steel profile with electrostatic paint
Body	Steel sheet with electrostatic paint
Time of the first test	Less than 1 minute
Continuous test operation cycle (hours)	24 hours / 7 days
Compressed air source requirements	Air compressor (tank capacity: 50 l)
Input power	110-240 V, single phase, 50 – 60 Hz

Filter/Mask Test Specifications

		FT150EA	FT200PO	FT200PS
Test Modes	Pressure drop test	✓	✓	✓
	Air permeability test	✓	✓	✓
	Filtration efficiency test	Atmospheric	Atmospheric and oil aerosols	Atmospheric, oil and salt aerosols
	Bubble point	Optional	Optional	Optional
Control	PLC	✓	✓	✓
	HMI (Touch Screen)	7"	7"	7"
Air flow	Mass Flow	1 - 150 l/min	1 - 200 l/min	1 - 200 l/min
	Digital control	✓	✓	✓
Media Holder	Test area	4.9, 20, 25, 38, 50 and 100 cm^2	4.9, 20, 25, 38, 50 and 100 cm^2	4.9, 20, 25, 38, 50 and 100 cm^2
Sensors (Transmitters)	Temperature	✓	✓	✓
	Relative humidity	✓	✓	✓
	Digital tank pressure control	×	✓	✓
Air Compressor	Tank pressure	1 – 8 bar	1 – 8 bar	1 – 8 bar
Pressure Drop	Pressure drop	0 – 1000 Pa	0 – 1000 Pa	0 – 1000 Pa
	Digital control	✓	✓	✓
Air Dryer	Airline trap	✓	✓	✓
	Dryer system	Optional	Optional	Optional
Particle Counter	Laser particle counter	1	1	1
	Channels	four-channels	four-channels	four-channels
	Channel sizes	0.3, 0.5, 1.0, 3.0 µm	0.3, 0.5, 1.0, 3.0 µm	0.3, 0.5, 1.0, 3.0 µm
	Flow rate	2.8 L/min	2.8 L/min	2.8 L/min
Aerosol Generator (Oil)	Generator	×	✓	✓
Aerosol Dilutor	Particle dilution	×	100:1	100:1
	Type of aerosol challenge	×	Paraffin, PAO, DOP	Paraffin, PAO, DOP
Aerosol Generator (Salt)	Generator	×	×	✓
	Neutralizer	×	×	✓
Printer		Optional	Optional	✓
Respiratory Face Mask Holder (3D masks)		Optional	Optional	✓
Input Power		Single phase, 220 V, AC	Single phase, 220 V, AC	Single phase, 220 V, AC
Weight		About 170 kg	About 180 kg	About 180 kg
Size (cm) (Length × Width × Height)		94×92×163	94×92×163	94×92×163

Standards	BS EN 149
	BS EN 779
	US 42 CFR 84
	ISO 16890
	ISO 16900-3
	ISO 11155-1
	ISO 5011