GAZELLE®



±2500 Pa
STATIC PRESSURE RANGE

G9803

DUCT AIR LEAKAGE TESTER

G9800 SERIES · BUILT-IN PRINTER

GAZELLE®

G9803
DUCT AIR LEAKAGE TESTER WITH BUILT-IN PRINTER

The Gazelle G9803 Duct Air Leakage Tester is used for testing the sealing performance of air conditioning ducts. It can test segmented ducts and the main duct after the entire system is installed, ensuring the working efficiency of the air conditioning system and avoiding energy waste. The instrument performs tests according to relevant certification standards and can directly determine whether the duct's sealing performance is up to standard. A 5-inch LCD colour touchscreen drives the test sequence, and a built-in printer issues the result at the point of test, with up to 1000 results held in memory for review or export to a USB drive.



Machine structure. The fan inlet is on the opposite side of the fan housing; the matrix and nozzle flow tools are stored inside the cabinet. Source: G9803 user manual, section 2.1.

640 m³/h	±2500 Pa	±2.5%	1000
MAX AIR FLOW (MATRIX)	STATIC PRESSURE RANGE	AIR FLOW ACCURACY	STORED TEST RECORDS

KEY FEATURES

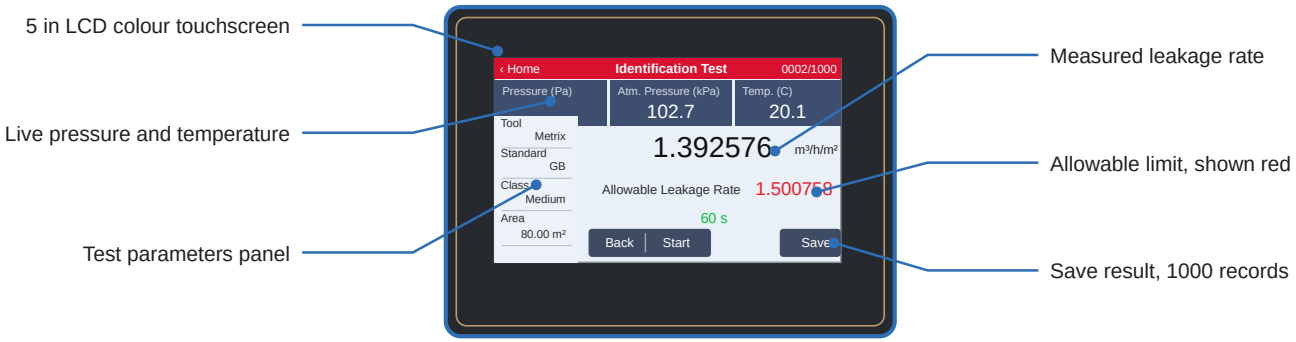
- Test duct sealing under positive and negative pressure
- Duct sealing assessed to EN1507:2006, EN12237:2003, Eurovent 2/2, DW/143, SMACNA, AABC and GB50243-2003/2016
- Wide airflow measurement range; two measuring tools ensure measurement accuracy
- Assessment results directly determine whether the duct sealing is qualified
- Real-time display of leakage, test pressure, temperature and atmospheric pressure
- Built-in printer for a result printout at the point of test
- 1000 sets of data storage, browsing and deletion
- USB export of stored results to a USB drive
- 5-inch LCD touchscreen for easy operation
- Matrix and nozzle flow tools carried on board in the instrument cabinet
- Tests segmented ducts and the main duct after the entire system is installed
- Simple construction and convenient installation

EN 1507:2006 | EN 12237:2003 | EUROVENT 2/2 | DW/143 | SMACNA | AABC | GB 50243

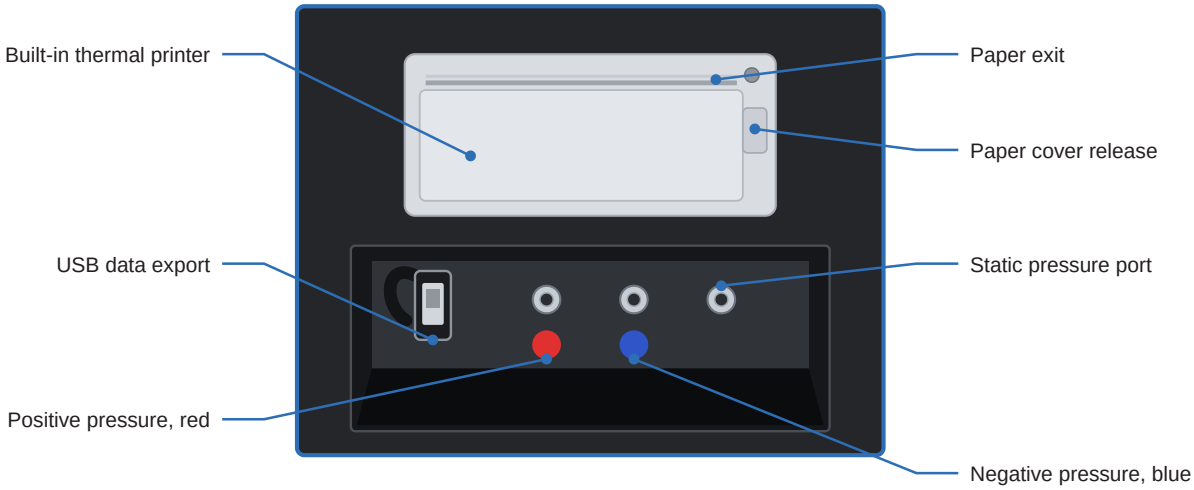
GAZELLE®

OPERATOR INTERFACE

TOUCHSCREEN CONTROLLER



PRINTER AND CONNECTION PANEL



Controller and side interface panel drawn from product photographs; port functions and printer location per G9803 user manual, section 2.2.

RESULT HANDLING

Printout	**Built-in printer**
On-board storage	**Up to 1000 measurements**
Review and delete	**On screen, by record**
Export	**USB drive**
USB drive requirement	**USB 2.0, FAT**

MAIN MENU

Certification Test – set the criteria, test to the standard and save

General Test – measure air flow, pressure, temperature and atmosphere

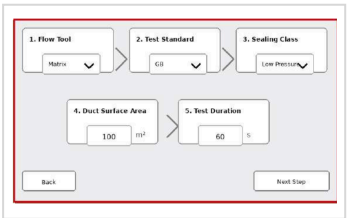
Result – browse, print or delete stored results

Settings – date, time, airflow mode, units and language

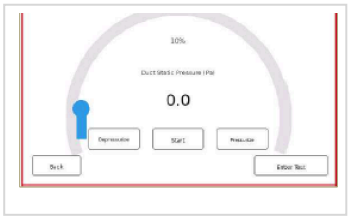
TOUCHSCREEN SEQUENCE



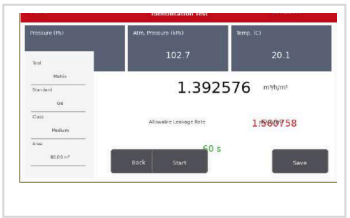
MAIN MENU



TEST PARAMETERS



PRESSURE SET-UP



LIVE TEST RESULT

GAZELLE®

SPECIFICATIONS

MEASUREMENT PERFORMANCE

Air Flow

Range (Matrix)	**36 to 640 m³/h**
Range (Nozzle)	**4 to 36 m³/h**
Accuracy	**±2.5% of the reading ±0.1 m³/h**
Resolution	**0.01 m³/h**

Static Pressure

Range	**±2500 Pa**
Accuracy	**1% ±1 Pa of the reading**
Resolution	**0.1 Pa**

Temperature

Range	**0 to 60 °C**
Accuracy	**±0.5 °C**
Resolution	**0.1 °C**

Atmospheric Pressure

Range	**70 to 130 kPa**
Accuracy	**±2% of the reading**
Resolution	**0.1 kPa**

FLOW TOOLS SUPPLIED

	Nozzle	Matrix (flow grid)
Flow range	4 to 36 m³/h	36 to 640 m³/h
Application	Low-flow testing	High-flow testing

MODEL VARIANTS

Model	Power supply
G9803-0E	100-120 V, 1 Phase, 50/60 Hz, 16 A
G9803-1E	200-240 V, 1 Phase, 50/60 Hz, 10 A

DISPLAY, PRINTING & DATA

Display	**5 in LCD colour touchscreen**
Printer	**Built-in**
Data logging	**Up to 1000 measurements**
Data export	**USB drive (USB 2.0, FAT)**

PHYSICAL

Net weight	**Approximately 72 kg**
Dimensions (W × D × H)	**98 × 63 × 63 cm**
Lifting ring max. load	**200 kg**

WARRANTY AND SERVICE

Warranty	**1 year**

Free repair of damage not caused by misuse. Supplied with a calibration certificate.

SCOPE OF DELIVERY

1 × Duct Air Leakage Tester	1 × Duct connection hose	1 × ⌀6 Silicone tube (red)
1 × Flow grid (matrix tool)	1 × Container	1 × Calibration certificate
1 × Low flow nozzle	1 × Power cord	1 × Instruction manual
1 × ⌀6 Silicone tube (white)	1 × ⌀6 Silicone tube (blue)	

OPTIONAL ACCESSORIES, ORDERED SEPARATELY

- Smoke pellet kits
- Dust-proof cover

Scope of delivery per the G9803 user manual component list. Tube quantities are one of each colour.

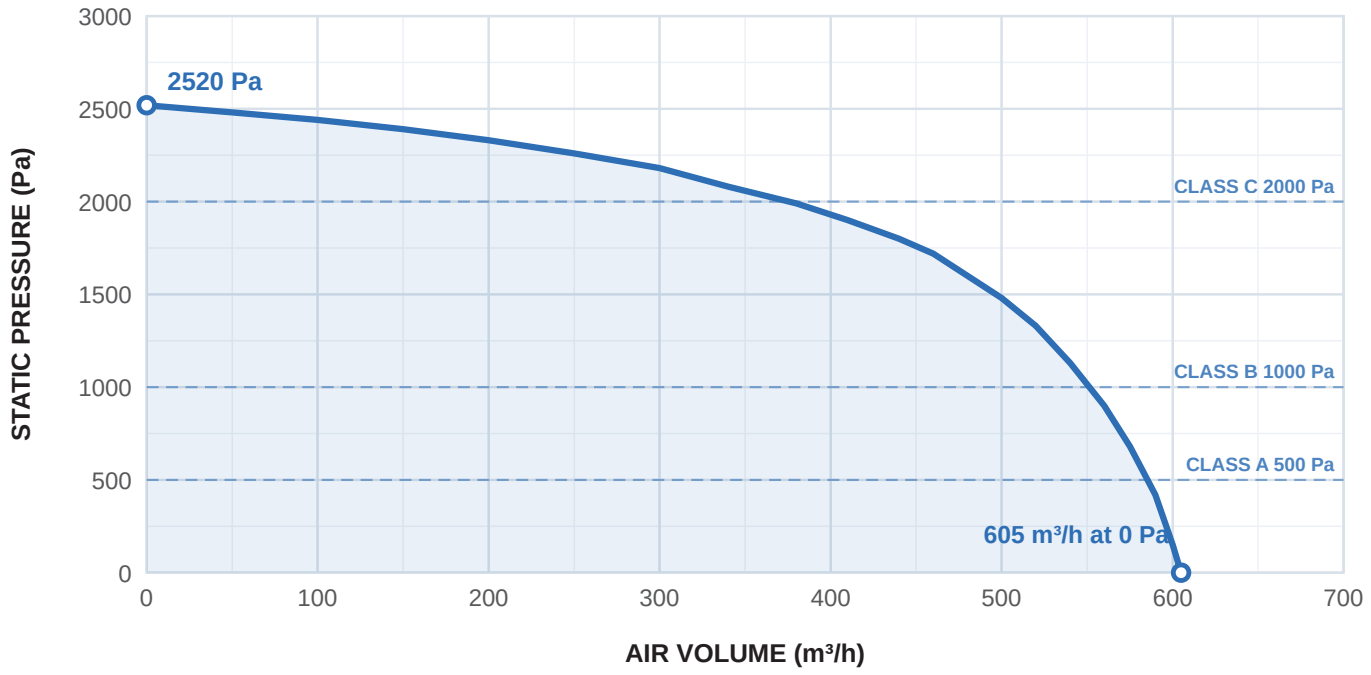
TEST STANDARDS SUPPORTED

Standard	Region	Scope
BS EN 12237:2003	EU	Ventilation for buildings. Ductwork. Strength and leakage of circular sheet metal ducts
BS EN 1507:2006	EU	Ventilation for buildings. Rectangular sheet metal air ducts. Strength and leakage
DW/143	EU	HVAC. A practical guide to ductwork leakage testing
Eurovent 2/2	EU	Air leakage rate in sheet metal air distribution systems
SMACNA	US	HVAC Air Duct Leakage Test Manual, first edition, 2012
AABC	US	Associated Air Balance Council standard
GB 50243:2003/2016	GB	Ventilation and Air Conditioning Engineering

GAZELLE®

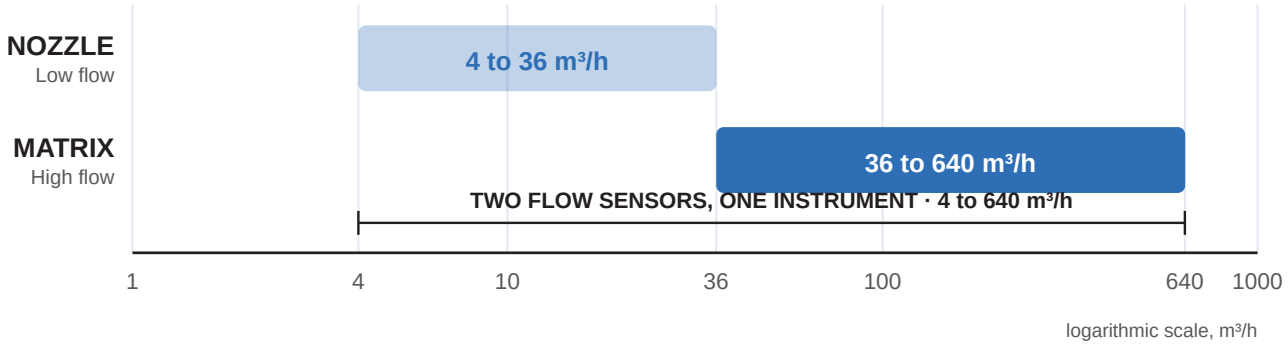
MEASUREMENT CAPABILITY

FAN PERFORMANCE CURVE



Static pressure against air volume at the fan outlet. Duct pressure class limits shown for reference. Source: G9803 user manual, Appendix 2; class limits from Appendix 1, DW/143.

DUAL-TOOL FLOW COVERAGE



A nozzle tool is used for low-flow testing and a matrix tool for high-flow testing. Source: G9803 user manual, section 3.

MEASURED PARAMETERS AND ACCURACY

Parameter	Range	Accuracy	Resolution
Air flow (Matrix)	36 to 640 m³/h	±2.5% of the reading ±0.1 m³/h	0.01 m³/h
Air flow (Nozzle)	4 to 36 m³/h	±2.5% of the reading ±0.1 m³/h	0.01 m³/h
Static pressure	±2500 Pa	1% ±1 Pa of the reading	0.1 Pa
Temperature	0 to 60 °C	±0.5 °C	0.1 °C
Atmospheric pressure	70 to 130 kPa	±2% of the reading	0.1 kPa

GAZELLE®

HOW IT TESTS

TEST SET-UP SEQUENCE

1	2	3	4	5
Flow Tool	**Test Standard**	**Sealing Class**	**Duct Surface Area**	**Test Duration**
Matrix or Nozzle	EN, DW/143, SMACNA, AABC, GB	Select or enter class	Enter area in m²	Enter time in seconds

After the parameters are set, start the fan, adjust the duct static pressure using Pressurize or Depressurize, enter the test, then save the result. Source: G9803 user manual, section 4.2.

FLOW TOOL SELECTION

	Nozzle	Matrix
Flow range	4 to 36 m³/h	36 to 640 m³/h
Application	Low-flow testing	High-flow testing
Fitted at	Fan outlet, cam-lock	Fan outlet, cam-lock
Pressure tap	To airflow differential pressure interface	To airflow differential pressure interface

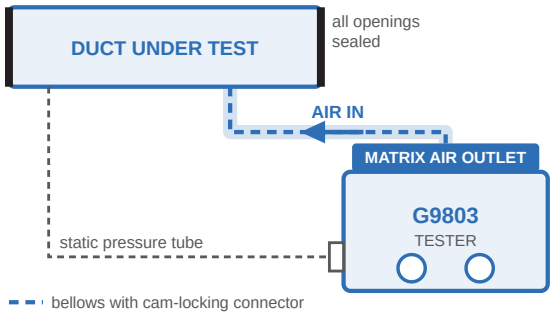
DUCT SURFACE AREA



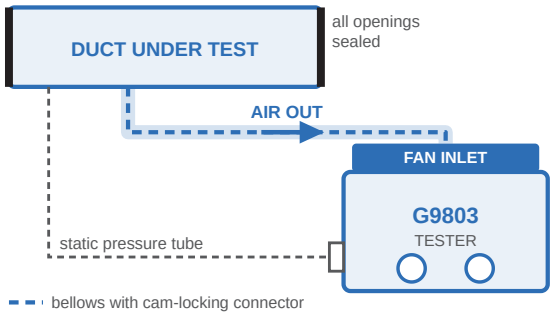
$$S = (ab + bc + ca) \times 2$$

Seal all joints of the duct under test, leaving only one joint connected to the testing machine, and calculate the surface area within the input range of the machine.

PRESSURE CONFIGURATIONS



POSITIVE PRESSURE TEST



NEGATIVE PRESSURE TEST

Positive pressure: connect the cam-locking connector of the bellows to the matrix air outlet. Negative pressure: connect it to the fan inlet.

SITE INSTALLATION

- Place the instrument close to the duct under test so the corrugated pipe stays short and pressure loss is kept low
- Connect one end of the corrugated pipe to the instrument with the cam-locking connector and the other end to the duct by flange
- Connect the static pressure pipe to the duct's static pressure tap; where there is none, drill a ⌀6 hole, insert the pipe and seal around it
- Connect the other end of the static pressure pipe to the static pressure interface on the instrument
- Check that the duct is clear and the corrugated pipe is not folded before starting the fan

Source: G9803 user manual, section 3.1 and Appendix 3; safety items from the warning, caution and Precautions pages.

SAFETY AND HANDLING

Power the instrument within the permissible voltage range of its variant	Operate the touchscreen with a finger; the screen is glass, so avoid sharp objects and impacts
Allow ventilation and heat dissipation; keep clear of heat sources	Do not drop the instrument or place heavy objects on it
Do not use or store in high temperature, high humidity, dusty conditions or direct sunlight	Do not disassemble, refit or replace parts without authorisation
Keep away from water and rain; disconnect the power if water enters the instrument	Unplug when not in use and keep the instrument dry during long storage

GAZELLE®

AIR TIGHTNESS CLASS REFERENCE

EN 12237

Air Tightness Class	Air Leakage Limit f_{max} $m^3/s/m^2$	Neg. Pa	Pos. Pa
A	$0.027 \times p_t^{0.65} / 1000$	500	500
B	$0.009 \times p_t^{0.65} / 1000$	750	1000
C	$0.003 \times p_t^{0.65} / 1000$	750	2000
D	$0.001 \times p_t^{0.65} / 1000$	750	2000

EN 1507

Class	Air Leakage Limit f_{max}	Neg.	Pos. 1	2	3
A	$0.027 \times p_t^{0.65} / 1000$	200	400	–	–
B	$0.009 \times p_t^{0.65} / 1000$	500	400	1000	2000
C	$0.003 \times p_t^{0.65} / 1000$	750	400	1000	2000
D*	$0.001 \times p_t^{0.65} / 1000$	750	400	1000	2000

* Class D ductwork is only for special apparatus. Static pressure limits in Pa.

EUROVENT 2/2

Air Tightness Class	Air Leakage Limit f_{max} $m^3/s/m^2$
A	$0.027 \times p_t^{0.65} / 1000$
B	$0.009 \times p_t^{0.65} / 1000$
C	$0.003 \times p_t^{0.65} / 1000$

GB 50243

Rectangular Duct Pressure Class	Maximum Leakage Rate $m^3/h/m^2$
Low voltage system	$0.1056 \times p^{0.65}$
Medium voltage system	$0.0352 \times p^{0.65}$
High voltage system	$0.0117 \times p^{0.65}$

p refers to the working pressure (Pa) of the duct system.

LOCATING A LEAK

Visually inspect the seals of all vents and duct joints
Listen for drafts during pressurization; larger leaks produce a distinct hissing sound
Place a hand near the duct surface to feel airflow at the leak
Apply soapy water to the duct joints and observe for bubbles
Light a smoke pen inside the duct; smoke will appear at the leak

DW/143

Duct Pressure Class	Pos. Pa	Neg. Pa	Max. Air Velocity m/s	Air Leakage Limit l/s/m²
Low Pressure – Class A	500	500	10	$0.027 \times p_t^{0.65}$
Medium Pressure – Class B	1000	750	20	$0.009 \times p_t^{0.65}$
High Pressure – Class C	2000	750	40	$0.003 \times p_t^{0.65}$

SMACNA

Duct Class	1/2-, 1-, 2-inwg	3-inwg	4-, 6-, 10-inwg
Seal Class	C	B	A
Sealing Applicable	Transverse Joints Only	Transverse Joints and Seams	Joints, Seams and All Wall Penetrations
Leakage Class – Rectangular Metal	16	8	4
Leakage Class – Round Metal	8	4	2

Maximum air leakage $F = CLP^{0.65}$, where F = maximum air leakage (cfm/100 ft²), CL = leakage class and P = pressure (inwg).

AABC

Type of system (examples)	Minimum Test Pressure	Max. Allowable Leakage
Fractional horsepower fan systems, fan coils, small exhaust/supply fans, residential	0.50"WC (125 Pa)	2%
VAV and CAV terminal boxes and associated downstream ductwork	1.00"WC (250 Pa)	2%
Single zone, multi-zone, return ducts and exhaust duct systems	2.00"WC (500 Pa)	2%
Chilled-beam primary supply	2.00"WC (500 Pa)	1%
Supply ducts for VAV and CAV systems	4.00"WC (995 Pa)	1%
High pressure induction systems; exhaust systems for labs with air valves	6.00"WC (1495 Pa)	0.5%
Grease duct systems	4.00"WC (995 Pa)	0.0%

Extract of the AABC schedule. The full 13-system table is given in the G9803 user manual, Appendix 1.

All class tables reproduced from the G9803 user manual, Appendix 1. Refer to the current issue of each standard for the governing requirements.