



UNIT & TEST IDENTIFICATION

Unit serial (QR)	EVO003GDW	Station firmware	—
Product size	22 mm	Tested by	Fortune · Tech (EVOP000004)
Box barcode	799192291265	Date & time tested	2026/09/04, 11:09:03
Test attempt	#1	Cycle duration	39.9 s
Test station	EVO-TESTER-001		

TEST RESULTS

#	Result	Measurement	Outcome
1	PRESSURE TEST 1 Initial load and 5-second hold	Hold start 23.7 kPa · Hold end 23.9 kPa · Drop 0.00 kPa · Hold 5.0 s · Leak rate 0.000 kPa/s	PASS
2	PRESSURE TEST 2 Reload after push-down and 5-second hold	Hold start 495.2 kPa · Hold end 494.4 kPa · Drop 0.80 kPa · Hold 5.0 s · Leak rate 0.159 kPa/s	PASS
3	PLUNGER OPENING	VACUUM BREAK / OPENING POINT: -3.383 kPa	PASS

RESULT DETAIL

RESULT 1 · PRESSURE TEST 1 Initial load and 5-second hold PASS	Criteria: Target 0.20 bar · 20.0 kPa · Max allowed drop 10.00 kPa Measured: Hold start 23.7 kPa · Hold end 23.9 kPa · Drop 0.00 kPa · Hold 5.0 s · Leak rate 0.000 kPa/s
RESULT 2 · PRESSURE TEST 2 Reload after push-down and 5-second hold PASS	Criteria: Target 5.00 bar · 500.0 kPa · Max allowed drop 10.00 kPa Measured: Hold start 495.2 kPa · Hold end 494.4 kPa · Drop 0.80 kPa · Hold 5.0 s · Leak rate 0.159 kPa/s
RESULT 3 · PLUNGER OPENING PASS	VACUUM BREAK / OPENING POINT -3.383 kPa Recorded 355 ms into the vacuum step.

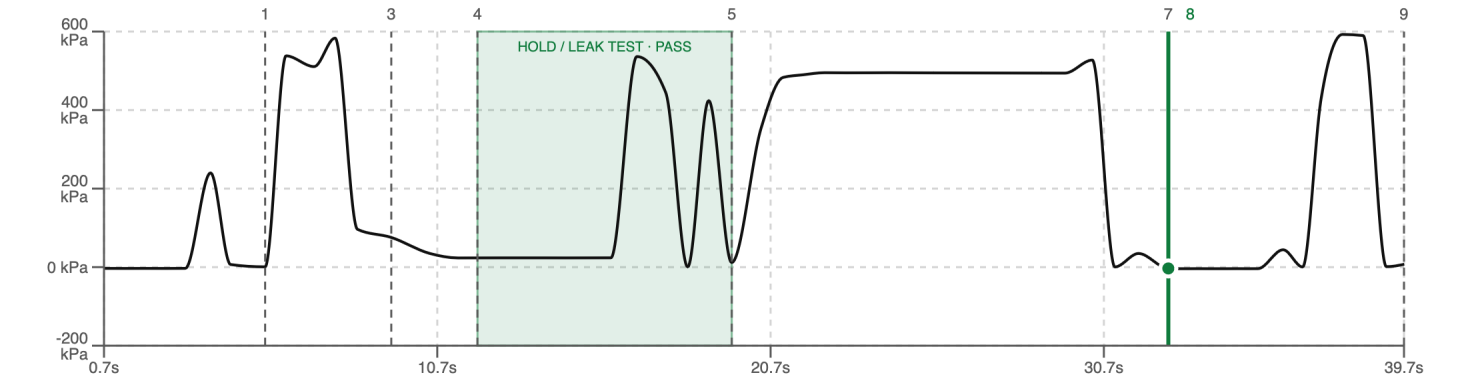
This certificate reports the automated production test performed on the EVO unit identified above. Three results are certified: pressure test 1 (initial load and 5-second hold), pressure test 2 (reload after push-down and 5-second hold) — each held against its own machine-configured target — and the plunger opening test. The vacuum break and plunger opening are the same physical event, reported as the exact sensor sample captured immediately before the vacuum trace rebounds toward atmosphere. All measurements were captured by the calibrated test station listed and are stored against this serial number for traceability.

Tested by: Fortune · Tech (EVOP000004)	Authorised by (Quality)	Date: 2026/09/04, 11:09:03
EVO · Certificate ref EVO-TESTER-001-3792c448-e63eaa69 · attempt 1 · unit EVO003GDW		

APPENDIX A — PRESSURE TRACE GRAPHS

Certificate ref EVO-TESTER-001-3792c448-e63eaa69 · unit EVO003GDW · attempt 1. Charts plot pressure (kPa) against elapsed time. Grey dashed line = size-matched reference profile, black line = measured signal. Items with no device evidence are shown as MISSING / UNRESOLVED.

COMPLETE TEST CYCLE LEAK TEST PASS
Full device pressure trace from 0.71 s to 39.72 s. Shaded band = hold / leak-measurement window. Numbered markers = cycle stage boundaries listed below. Green marker = vacuum plunger opening event (-3.383 kPa at 32.65 s).



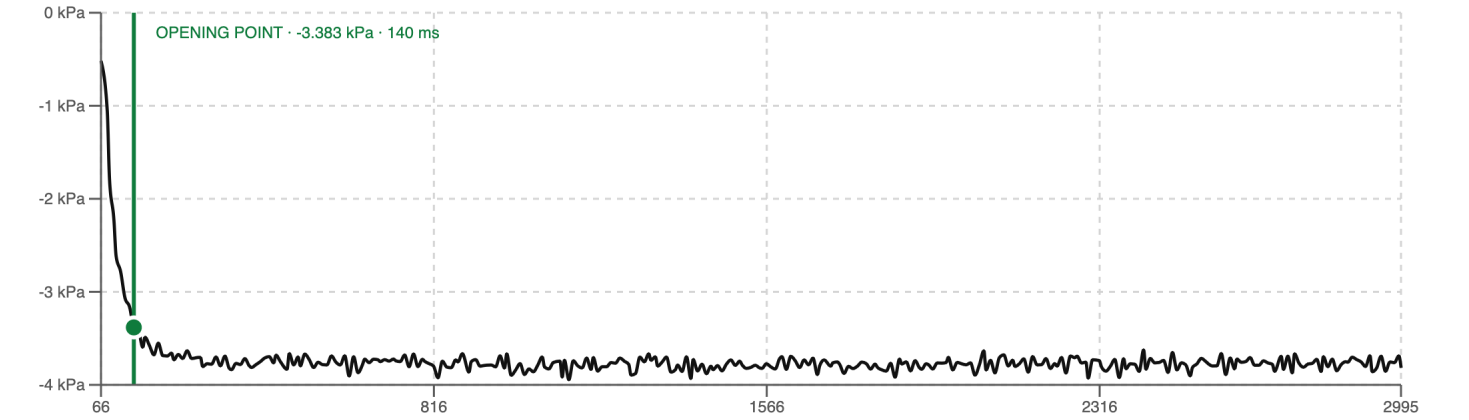
#	CYCLE STAGE / EVENT	TIME	PRESSURE
1	Product locked / loaded	5.55 s	0.85 kPa
2	Plunger down	MISSING	MISSING
3	Air push / purge	9.34 s	75.80 kPa
4	Pressure hold — leak measurement	11.92 s	23.74 kPa
5	Exhaust / vent	19.55 s	11.82 kPa
6	Plunger up / release	MISSING	MISSING
7	Vacuum pull	32.65 s	-3.38 kPa
8	Plunger opening (vacuum break)	32.65 s	-3.38 kPa
9	Recovery / end of cycle	39.72 s	7.10 kPa

Hold start pressure	23.700 kPa
Hold end pressure	23.862 kPa
Hold duration	5000 ms
Pressure loss	0.000 kPa
Leak rate	0.000 kPa/s
Allowed loss	10.000 kPa
Target pressure	20.000 kPa
Window	11.92 s → 19.55 s

22 mm BUMBLEBEE PLUNGER OPENING CURVE

PASS

Pull-down, opening point and atmospheric rebound at 108.6 Hz. Green marker = VACUUM BREAK / OPENING POINT (-3.383 kPa at 140 ms pump). Shaded band = reference tolerance envelope.



Reference: bumblebee-22mm-flow-knee-20260901-v4	Match: 76.0 %	RMSE: —	Max profile error: —
Opening pressure error: -0.671 kPa	Opening time error: -45 ms	Sample rate: 108.6 Hz	