

CNG Circuit Leak Tester For Volvo Busses



About us:

Neometrix Defence Celebrating 20 Years of Excellence! For the past two decades, Neometrix Defence has maintained its position as a premier provider of advanced test benches and rigs.

Our accreditation by the Directorate General of Aeronautical Quality Assurance, India (DGAQA) and Defence Research & Development Organization, India (DRDO) underscores our commitment to upholding the highest international defence industry standards.

Counting the Indian Air Force/Army/Navy, Ministry of Defence, Hindustan Aeronautical Limited, and DRDO among our esteemed clientele, we are recognized for delivering state-of-the-art solutions and unwavering performance reliability.

Strengths & Capabilities:

Neometrix Defence is a powerhouse of engineering brilliance, proudly serving every Indian Air Force station and partnering with the Indian Army, Navy, Railways, BARC, NPCIL, and ISRO. With a team of over 100 elite engineers and visionary founders from IIT Kanpur and IIT Delhi, we harness cutting-edge technology to set the gold standard in mechanical engineering.

We Don't Just Meet Industry Demands – We Define Them!



- We have established our presence in all Air Force stations across India. With the Indian Air Force as our leading customer, we are dedicated to upholding the highest standards of excellence in the aerospace industry.
- Our extensive clientele extends beyond the defence industry, including projects with the Indian Army, Navy, Railways, BARC, NPCIL, ISRO, and more. In essence, we excel in all aspects of mechanical engineering!
- Our team comprises over 100 graduate engineers, supported by a cutting-edge manufacturing site equipped with state-of-the-art machinery, enabling us to meet the highest Engineering standards.
- The founders of our company are distinguished graduates from IIT Kanpur and IIT Delhi, bringing extensive expertise and a wealth of engineering knowledge to Neometrix Defence.

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Introduction:

The CNG Circuit Leak Testing Machine by Neometrix Defence is an advanced, air-driven test rig tailored for Volvo buses and other CNG-based transportation platforms. It enables high-precision leak detection, pressure validation, and safe cylinder filling without the need for electrical power—making it intrinsically safe for hazardous and volatile environments. At its core lies a rugged Haskel pneumatic booster, delivering test pressures up to 345 bar (5000 PSI) purely through compressed air.

Engineered for both stationary and mobile deployment, the system supports multiple output pressure levels (10, 50, 100, 200 kg/cm²), with quick-change connectors for seamless integration into various testing setups. Built-in 5-micron filtration, manual/step pressurization controls, and standby booster redundancy ensure uncompromised reliability, gas purity, and fail-safe operation.

With its compact footprint, spark-free pneumatic architecture, and multi-gas compatibility (Nitrogen, Oxygen, Helium, Hydrogen), the machine is ideal for OEM bus lines, fleet maintenance depots, R&D facilities, and third-party certification labs. The intuitive layout and modular design enable technicians to perform testing cycles efficiently, safely, and with minimal setup time—translating into improved throughput and superior test confidence.

Whether you're validating a new CNG bus circuit or conducting routine diagnostics on an aging vehicle fleet, Neometrix's CNG Leak Testing Machine sets a new benchmark in pneumatic test engineering.



Purpose & Applications:

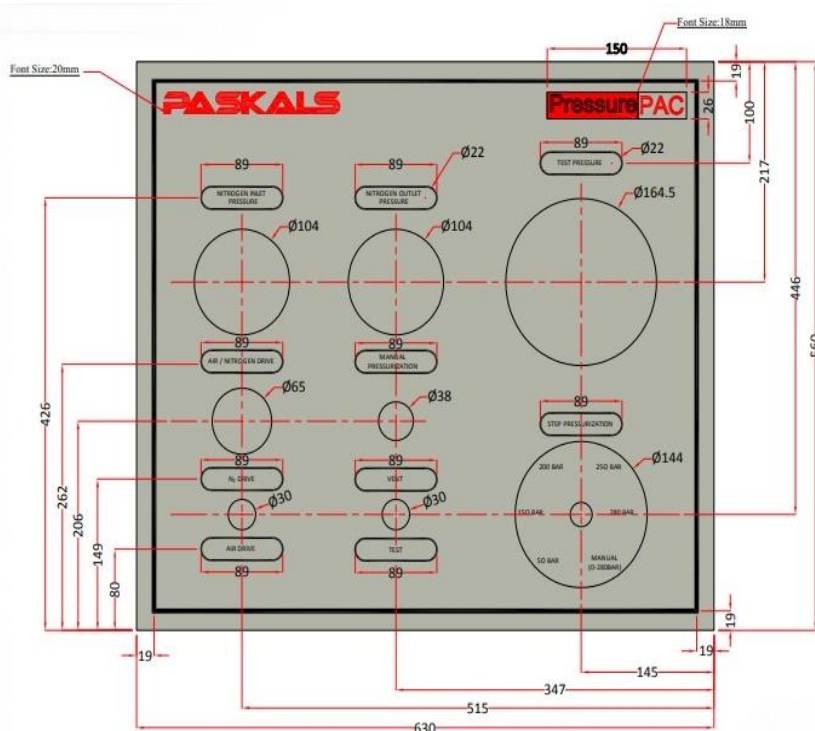
The CNG Circuit Leak Testing Machine is designed for mission-critical testing and validation of compressed gas circuits, particularly in Volvo buses and similar high-performance transport systems. Its key functions include:

- Leak Detection: Detects micro-leaks in CNG pipes, hoses, joints, and fittings using pressure hold/drop methods.
- Pressure Endurance Testing: Simulates operating conditions to validate system integrity under high pressure.
- Cylinder Filling: Provides safe, controlled pressurization of CNG storage cylinders.
- Multi-Gas Flexibility: Operates with Nitrogen, Helium, Oxygen, and Hydrogen, making it suitable for a variety of R&D, aerospace, and industrial applications.

Primary Applications:

- Volvo Bus Maintenance Depots – for routine inspection and servicing of onboard CNG circuits.
- OEM Assembly Lines – for batch testing before delivery of gas-powered vehicles.
- Third-Party Validation Labs – where standardized testing and certification are required.
- Defence and Research Units – for evaluating high-pressure performance of cylinders and valves in controlled test environments.

This machine is equally suitable for urban transit agencies, automotive testing facilities, and alternative fuel research centers seeking safe, accurate, and rapid CNG circuit validation.



System Architecture:

Every subsystem of the machine is designed for maximum safety, modularity, and longevity:

Pneumatic Booster Core:

- Haskel air-driven booster (dual configuration with standby)
- Delivers up to 345 bar output pressure from compressed air input

Drive & Filtration Section:

- Compressed air inlet: min. 4 kg/cm²
- Inlet gas filtration: 5-micron high-pressure inline filters
- Purity ensured for all gases, especially O₂ and H₂

Pressure Modulation:

- Manual pressurization valve for controlled ramp-up
- Step pressurization for test profile simulation
- Overpressure relief valve (factory-set)

Control Panel:

- Dual analog gauges with ±1% FS accuracy
- Pressure selection switch
- Venting control

Connectors & Ports:

- Quick-coupling high-pressure outlets
- Stainless steel hose with 1000 bar burst strength
- Inlet ports compatible with industry-standard CNG cylinders



Technical Specifications:

Parameter	Specification
Drive Air Pressure	Min. 4 kg/cm ²
Drive Flow Requirement	60 SCFM
Air Purity	5-7 Micron
Inlet Gas Pressure (Nitrogen)	17-150 kg/cm ²
Output Pressure Range	10, 50, 100, 200 kg/cm ²
Max Boosted Pressure	345 bar (5000 PSI)
Filter Rating	5 Micron high-pressure filters
Hose Specification	PTFE core, steel braided, 1000 bar burst
Compatible Gases	N ₂ , O ₂ , H ₂ , He
Pressure Gauges	Analog, glycerine-filled, dual-scale
Relief Valve	Calibrated, overpressure protection
Operation Type	Pneumatic (non-electric)

Mechanical & Environmental Design:

Built for tough industrial conditions, the machine features:

- Chassis: SS-304 frame with powder-coated panels; corrosion and impact resistant.
- Size & Mobility: Compact skid-mount base with castor options for mobile deployment.
- Temperature Range: Operates from -10 °C to +50 °C.
- Corrosion Resistance: All wetted parts SS-304; optional 316L for higher compatibility.
- Isolation Mounts: Reduce vibrations during pressurization; extends component life.
- Environmental Safety: IP54-rated components resist dust and light splashes.

Operational Workflow

- Setup: Connect air supply and CNG inlet cylinder.
- Priming: Bleed lines to remove air; check filters and gauges.
- Pressurization: Use manual/step valve to reach desired test pressure.
- Leak Test: Monitor for pressure drops using dual-scale gauges.
- Cylinder Charging: Initiate fill cycle under supervision.
- Depressurization: Slowly vent residual pressure post-test.
- Shutdown: Disconnect hoses, clean ports, and store the system securely

Safety Compliance & Quality:

Active Safety Features:

- Overpressure relief valves (set to 345 bar max)
- Manual vent control and emergency bleed switch
- Mechanical locking on couplers and hose ends

Compliance:

- ISO 9001:2015 certified manufacturing
- MIL-STD-810G compliance for ruggedness
- CE Marking and compatible with EU Pressure Equipment Directive

Quality Assurance:

- NIST-traceable pressure gauge calibration
- 100% pressure tested prior to dispatch
- Optional FAT (Factory Acceptance Testing) protocols with full documentation