NEOMETRIX

CCB BURN TEST RIG

Product Catalog

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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 CCB Burn Test Rig is an industry-grade, turnkey platform engineered to perform rigorous burn-in and functional testing on Central Control Block electronic brake controllers. As a fully pneumatic, multi-channel system, it drives up to four controllers simultaneously through repeatable pressure cycles (0–16 bar via a Class 0.05 precision regulator) and synchronized electrical loading (0–120 V DC @ 7 A) to reproduce the dynamic stresses encountered in real-world rail and automotive braking applications.

At its core, the burn-in process accelerates latent-defect manifestation by subjecting units to controlled stress profiles, uncovering early-life failures before they propagate in the field. Coupled with integrated data-logging and programmable software interfaces, this methodology not only validates design robustness but also provides detailed traceability for failure-analysis and continuous quality improvement initiatives. Designed for seamless integration into production and maintenance workflows, the rig's compact, wheeled extruded – aluminium frame and modular control panel allow rapid deployment across OEM assembly lines, Tier-1 supplier QA stations, rail operator depots, independent laboratories, and R&D facilities. Comprehensive safety interlocks, scheduled maintenance protocols, and customizable user interfaces ensure both operator protection and equipment longevity.

By enforcing stringent stress-screening standards and validating every controller's performance under realistic pneumatic and electrical loads, the CCB Burn Test Rig empowers manufacturers and service providers to deliver brake controllers that meet the highest benchmarks of reliability and safety—minimizing in-service failures, reducing warranty costs, and upholding passenger and asset protection.

Description:

1. Multi-Channel Burn-In: Four independent test channels allow simultaneous burn-in of up to four CCB controllers, maximizing throughput and production efficiency.

2. Precision Pressure Control: High-accuracy regulator delivers 0–16 bar air pressure, monitored by a Class 0.05 dual-scale gauge (0–16 kg/cm² | 0–220 PSI) for exact stress application.

3. Staged Reservoir Array: Eight stainless-steel tanks (2 × 25 L, 5 × 13 L, plus one customer-provided 13 L) maintain stable pressure between cycles, eliminating pressure sag during rapid sequencing.

4. Rapid UUT Hookup: BSP quick-release couplings (1½″, 1″, ½″, ¼″) and 3 m braided hoses on spring-loaded reels enable tool-free, sub-minute changeovers of units under test.

5. Compact Mobility: All pneumatic and electrical components are mounted on a wheeled extruded-aluminium frame for easy relocation across production floors or maintenance depots.

6. Integrated DC Power: Dual-output 0–120 V DC @ 7 A power supply seamlessly powers controller electronics under test without external supplies.

Duty:

- Performs simultaneous burn-in and functional verification of up to four CCB brake controllers under realistic pneumatic (0–16 bar) and electrical (0–120 V DC @ 7 A) stress profiles Detailed description.

- Provides programmable test sequencing—including cycle counts and dwell times—via the supplied customizable software interface.

- Integrates seamlessly into OEM production lines, Tier-1 supplier QA processes, depot maintenance, and R&D workflows to ensure every controller meets stringent reliability benchmarks

Technical Specification:

Component	Specification
Air filter & Regulator	1" line (adaptable to 1½"), 0–12 bar regulator
SS Reservoirs	2 × 25 L & 5 × 13 L, rated 10 bar (tested to 16 bar)
Valves (cocks)	BSP quick-release couplings: 1½", 1", ½", ¼" (10 bar line pressure)
Safety valves	¼" spring-loaded, set at 10 bar
Pressure gauge	Dual-scale 0–16 kg/cm²
Couplings & Nipples	BSP-threaded quick-release couplings & matching nipples (1", 3/8", 1/4")
Hoses	BSP female swivel; 3–4 m lengths; rated 10 bar
Calibration Port	¼" Minimises coupling for external calibration
Control Panel & Frame	Extruded-aluminium with four wheels; custom layout for regulators, gauges, reels
DC Power Supply	Dual-output 0–120 V DC, 7 A

Pressure Testing Parameters:

- Pressure Range: 0–16 bar via Class 0.05 precision regulator.
- Electrical Load: Configurable 0–120 V DC @ 7 A through integrated power supply.
- Cycle Configuration: Software-programmable sequences with adjustable cycle counts and dwell times via the customizable software interface.

Salient features:

- High-Throughput Burn-In: Four channels for parallel testing, reducing time-to-market.
- Ultraprecise Pressure Control: Class 0.05 regulator and dual-scale gauge ensure exact stress levels.
- Rapid Unit Changeover: Quick-release couplings and spring reels streamline UUT swaps.
- Portability: Wheeled extruded-aluminium frame for easy relocation within facilities.
- Integrated Power Delivery: Self-contained DC supply eliminates external rack requirements.

Main Features & Application of CCB Burn Test Rig:

As a turnkey solution, the CCB Burn Test Rig unites both pneumatic burn-in and electrical functional testing within a single compact platform. Its four independent channels each feature dedicated regulators, reservoirs, and quick couplings, enabling simultaneous, independently controlled stress screening. The staged reservoir array minimizes pressure fluctuations between cycles, while the extruded-aluminium frame and spring-loaded hose reels facilitate rapid unit changeovers and on-the-fly reconfiguration. A user-friendly software interface empowers operators to program complex test profiles, monitor real-time parameters, and archive test data for traceable quality assurance.

APPLICATIONS

- OEM Production Lines: 100% burn-in and design verification to eliminate early-life failures.
- Tier-1 Supplier QA: Batch testing and incoming inspection for critical safety components.
- Railway Maintenance Depots: In-service health checks, refurbishment validation, and predictive maintenance.
- Independent Laboratories: Contract testing, standards-compliance audits, and reliability studies with multi-unit capacity.
- R&D Facilities: Advanced thermo-pneumatic stress screening and process optimization when integrated with environmental chambers.

Electrical Power System and Automation:

- Integrated DC Supply: Dual-output 0–120 V DC @ 7 A powers controller electronics under test Detailed description
- Software Control: Customizable interface for sequencing pneumatic and electrical cycles, real-time monitoring, and data logging About
- Safety Interlocks: Comprehensive over-pressure relief valves, emergency stop circuitry, and LOTO provisions protect both operator and equipment

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