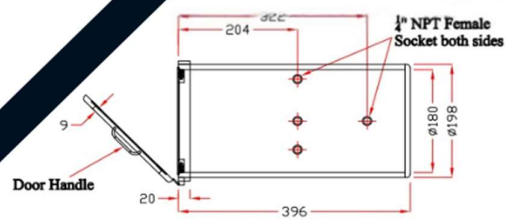
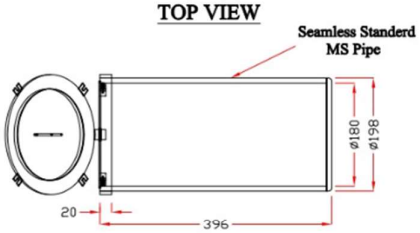
NEOMETRIX

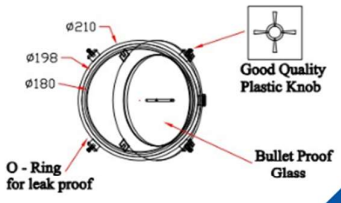
KU-7 Leak Tester



TOP VIEW



FRONT VIEW



SIDE VIEW

Note:-

1. Chamber should be leak proof.
2. Chamber of Seamless Std. MS Pipe
3. Cut out to be done by CNC & not manu
4. Material for chamber - MS, Quantity - 0
5. All Dimensions are in mm.

Product Catalog

www.neometrixgroup.com

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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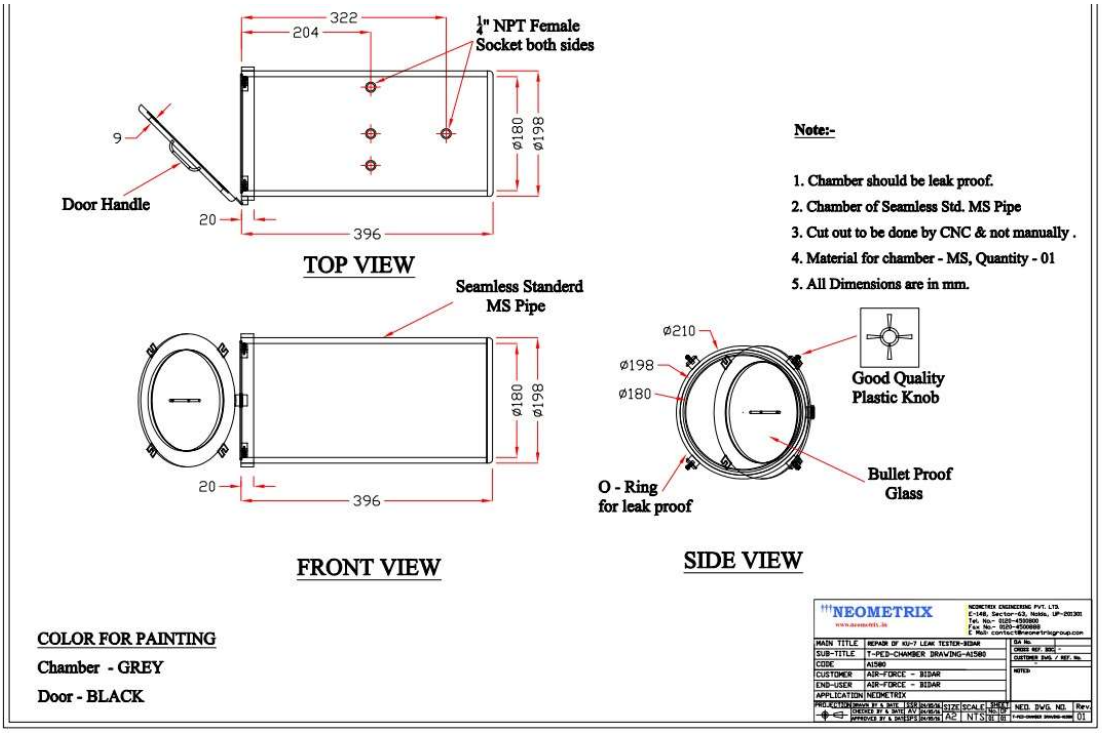
Introduction:

The KU-7 Oxygen Tester redefines on-site leak verification for oxygen-handling assemblies in aerospace and Defense environments. Engineered around a robust, quick-clamp chamber and dual-stage pressure regulators, it delivers the precision of a laboratory rig in a highly portable trolley package. Technicians simply wheel the unit into a hangar bay or ground-support depot, connect a shop-air or nitrogen supply, and initiate tests without complex plumbing or ergonomic compromises. By substituting inert nitrogen for oxygen during pressurization, the tester eliminates any combustion risk while still reproducing the exact pressure conditions that regulators, valves, and tubing will see in service. Two discrete test modes—endurance at up to 4 000 psi and fine-leak characterization down to 50 psi—cover every stage of acceptance, qualification, and periodic maintenance. All critical components (regulators, gauges, needle valves, relief devices and flowmeter) are mounted on an IP 54-rated stainless-steel frame built to withstand shop-floor abuse and environmental extremes. As a result, the KU-7 provides repeatable, traceable leak-test results that meet or exceed aerospace and military standards, without shackling your team to a fixed-location test bench.



Purpose & Applications:

Why Precision Leak-Testing Matters
Even sub-millimetre leaks in oxygen circuits can have catastrophic outcomes: fire propagation in enriched-oxygen environments, loss of life-support capability at altitude, and costly non-conformances during military or spaceflight certification. The KU-7 addresses these risks head-on through two complementary test regimes. In **endurance mode**, a 4 000-psi soak or cyclic profile reveals seal fatigue, material permeation and regulator spring-set drift over extended holds. In **fine-leak mode**, a 50-psi dwell test coupled with a calibrated chamber gauge pinpoints micro-leaks down to 10^{-4} mbar·L/s, matching the sensitivity requirements of NASA-STD-7012 and MIL-STD-25567.

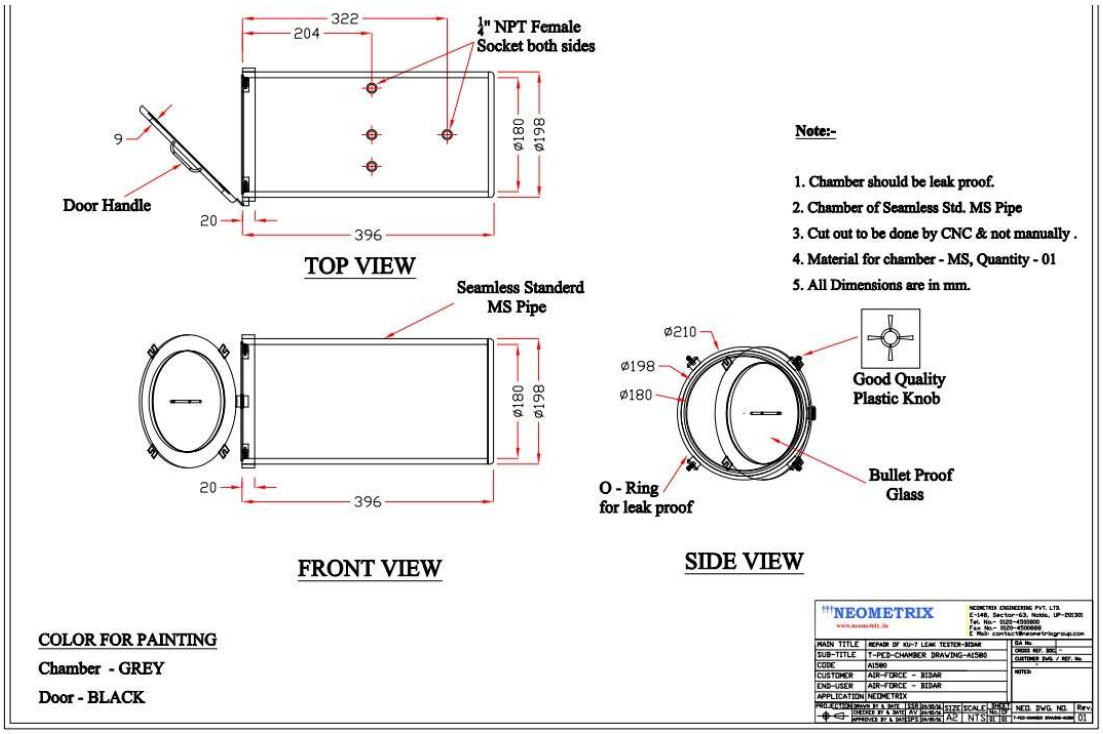
Key Application Areas

- **Aircraft Maintenance**: Scheduled A- and C-checks for oxygen regulators, masks, and manifolds.
- **Factory QA/QC**: Final acceptance tests on breathing-air packs, escape-system bottles and solenoid-valve assemblies.
- **Spaceflight Hardware**: Flight-ready leak-checks on EVA backpacks, portable life-support systems and emergency oxygen units.
- **R&D and Prototyping**: Rapid iteration testing of new valve designs, seal materials and trace-gas sniffing techniques, all without moving parts or complex fixtures.

System Architecture:

The KU-7's architecture balances modularity with rugged simplicity:

1. Air Supply & Regulation
   - Inlet Interface: Universal quick-connect for shop air or bulk nitrogen at up to 6 000 psi.
   - Dual Regulators: One stage steps down to 4 000 psi for endurance tests; the second stage delivers 50 psi for fine-leak holds. Knurled knobs and locknuts ensure setpoints cannot drift during long holds.
2. Pressure Sensing & Control
   - Primary Gauges: Three brass-internals gauges (0–8 600 psi, 0–140 psi, 0–60 psi) provide ±0.5 % full-scale accuracy.
   - Needle & Ball Valves: Five ¼"-OD precision valves isolate test, purge and vent circuits. Each features a blow-out-proof stem and captive handle.
3. Flow & Tracer Gas
   - Rotameter: Clear-tube flowmeter (0–6 SCFH) permits leak-localization with helium tracer, or purging at controlled rates before and after tests.
4. Data & Automation (Optional)
   - Digital Transducers: Optional analog-to-digital converters with USB/Ethernet output for capture of pressure vs. time.
   - Control Suite: Plug-and-play PLC/HMI or PC-SCADA package generates customizable test reports, trending and alarm logs



Technical Specifications:

Parameter	Specification
Test Medium	Nitrogen (oil-free, inert)
High-Pressure Range	0–4 000 psi (±0.5 % FS)
Low-Pressure Range	0–50 psi (±0.5 % FS)
Leak Sensitivity	≤1×10⁻⁴ mbar·L/s
Regulators (In→Out)	6 000→4 000 psi; 6 000→50 psi
Gauges	0–8 600 psi; 0–140 psi; 0–60 psi
Rotameter	0–6 SCFH
Needle/Ball Valves	345 bar rating, ¼″ OD tubing
Relief Valves	0–10 bar (2× spring-loaded)
Chamber Volume	~5 L
Dimensions (WxDxH)	24″×18″×48″
Weight	85 kg
Mobility	4-wheel trolley (2 lockable)

Mechanical & Environmental Design:

Encased in a powder-coated 304 SS chassis with quick-release panels, the rig is rated IP 54 against dust and splash. Swivel castors with integrated brakes ensure precise positioning. Forced-air ventilation cools electronics and pneumatics; an optional chamber extends operating range from –20 °C to +60 °C.

Operational Workflow

1. Setup & Pre-Check
   - Hook up shop air/nitrogen and 230 VAC power
   - Purge lines at 3 SCFH for 30 s; verify gauge zero

2. UUT Installation
   - Mount component; attach port adaptors; engage quick-clamp lid

3. High-Pressure Test
   - Ramp to 4 000 psi at 200 psi/min; hold for 10 min; record drift (<1 % allowed)

4. Low-Pressure Test
   - Vent; ramp to 50 psi; hold 5 min; check for gauge change or audible leak

5. Leak Localization
   - Introduce 1 % He tracer; sweep exterior with sniff probe via rotameter line

Safety, Compliance & Quality:

- Safety Features: Emergency-stop, overpressure relief, color-coded interlocks

- Standards: CE (EMC/LVD), MIL-STD-810G (shock/vibration), ISO 9001:2015, ISO 8573-1

- Documentation: IQ/OQ/PQ protocols, FAT/SAT templates, calibration certificates

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Installation, Training & Support:

On-Site Commissioning: Validation of performance against specs

Training: 2-day hands-on course covering operation, maintenance and safety

Warranty & Service: 12-month standard (extendable to 36 months); annual maintenance contracts; remote VPN diagnostics