



HOME OXYGEN CONCENTRATOR

Home Oxygen Concentrator - ToronOC™ 5L

5 L/min Medical-Grade Oxygen Concentrator for Home and Clinical Use

ToronOC™ 5L oxygen concentrator is a medical-grade oxygen therapy device engineered for continuous home and clinical use. The unit delivers an adjustable oxygen flow from 0.5 to 5 liters per minute at concentrations of 93% ($\pm 3\%$), supporting long-term respiratory support across a wide range of patient conditions.

The ToronOC™ 5L concentrates oxygen from ambient room air using molecular sieve technology, removing the need for high-pressure cylinders or scheduled refills. The device runs from a standard wall outlet, making it suitable for primary home oxygen concentrator use, secondary backup therapy, and clinical bedside supply.

A clear LCD readout, four-direction casters, and a humidifier bottle with 6 PSI pressure relief make the oxygen concentrator machine straightforward for patients and clinicians to operate. Innovative cooling technology supports 24/7/365 duty cycles, allowing the unit to remain in service without forced rest periods between sessions.

Compatibility with HBOC and HFNC accessories extends the ToronOC™ 5L beyond standard nasal cannula delivery, supporting rapid SpO₂ recovery and stable high-concentration oxygen therapy for patients with pulmonary fibrosis, COPD, post-COVID recovery, and other chronic respiratory conditions.

0.5-5 L/min OXYGEN FLOW RANGE	93% ($\pm 3\%$) OXYGEN CONCENTRATION	≤ 43 dB SOUND LEVEL	≤ 480 W POWER CONSUMPTION
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APPLICATIONS

Home Oxygen Concentrator - ToronOC™ 5L Applications

The ToronOC™ 5L oxygen concentrator supports a broad set of medical, home care, and clinical use cases. Stable medical-grade output across the 0.5–5 L/min range makes the device suitable for short-term recovery, long-term therapy, and adjunct treatment alongside other respiratory equipment.

Here is the information formatted as a bulleted list:

- Long-Term Oxygen Therapy at Home: Provides continuous oxygen flow for patients prescribed long-term oxygen therapy (LTOT), making it a practical home oxygen concentrator option for COPD, emphysema, and chronic bronchitis management.
- Pulmonary Fibrosis Support: Delivers medical-grade oxygen above 90% concentration to support patients with pulmonary fibrosis, where stable high-purity oxygen output assists breathing comfort and treatment outcomes.
- Post-COVID and Respiratory Recovery: Supports oxygen supplementation during recovery from viral pneumonia, post-COVID complications, and other respiratory illnesses requiring sustained low-to-moderate oxygen flow at home.
- Sleep Apnea and Nocturnal Oxygen: Pairs with CPAP and BiPAP systems to supply supplemental oxygen during sleep, helping maintain SpO₂ levels for patients with sleep-related hypoxemia.
- Clinic, Nursing Home, and Bedside Use: Functions as a bedside oxygen concentrator machine in outpatient clinics, dental offices, nursing homes, and hospice environments where cylinder logistics are impractical.
- High-Flow Nasal Cannula (HFNC) Therapy: Connects to HFNC circuits to deliver stable high-concentration oxygen for patients requiring elevated flow rates with controlled humidification.
- Hyperbaric and HBOC-Assisted Sessions: Couples with hyperbaric oxygen chambers (HBOC) to rapidly raise blood oxygen saturation during wellness, sports recovery, and adjunctive therapy programs.
- Veterinary and Animal Care: Supports oxygen supplementation for small and medium animals during anesthesia recovery, post-surgical care, and chronic respiratory treatment in veterinary clinics.



FEATURES

Home Oxygen Concentrator - ToronOC™ 5L Key Features

The ToronOC™ 5L combines clinical performance with practical home use considerations. The features below cover output stability, patient comfort, accessory compatibility, and continuous-duty reliability.

Here is the information formatted as a bulleted list:

- **Wide Flow Range (0.5–5 L/min):** Continuous flow adjustment from 0.5 to 5 liters per minute covers low-flow nocturnal therapy through high-demand daytime use, making one oxygen concentrator suitable for many prescription levels.
- **Medical-Grade Oxygen Output (93% $\pm$ 3%):** Stable oxygen concentration above 90% across the full flow range supports clinical treatment protocols for pulmonary fibrosis, COPD, and post-acute respiratory care.
- **Quiet Operation ($\leq$ 43 dB):** Low sound output below 43 dB allows the home oxygen concentrator to run overnight in bedrooms and during conversation in shared living spaces without disturbing the patient or family.
- **24/7/365 Continuous Duty:** Innovative cooling architecture allows uninterrupted operation around the clock, removing the need for forced rest cycles and supporting long-term oxygen therapy regimens.
- **Energy-Efficient Design ($\leq$ 480 W):** Maximum power draw under 480 W keeps household running costs low and allows the unit to operate from common 120 V or 220 V circuits depending on the configured model.
- **Easy-to-Read LCD Display:** The front-panel LCD shows flow rate, accumulated operating hours, and active alarms in clear, large characters readable from across a room.
- **Four-Direction Castors:** Four heavy-duty casters allow the oxygen concentrator for home use to be repositioned easily between bedroom, living room, and clinic spaces without lifting.
- **Humidifier Bottle with 6 PSI Pressure Relief:** The integrated humidifier adds moisture to delivered oxygen for patient comfort, while the 6 PSI relief valve protects the airway in the event of downstream tubing obstruction.
- **HBOC Compatibility:** Direct connection to a hyperbaric oxygen chamber (HBOC) enables rapid and reliable elevation of patient SpO₂ during clinical and wellness oxygen sessions.

- HFNC Compatibility: Output couples with high-flow nasal cannula (HFNC) systems to provide stable, high-concentration oxygen for patients requiring elevated flow with controlled humidification.
- Comprehensive Alarm Package: Standard alarms cover power failure, high or low pressure, and low oxygen concentration, with optional low-flow and high-temperature alarms available for clinical configurations.
- Compact Footprint: A 348 × 280 × 510 mm cabinet and 16 kg net weight fit naturally beside a chair or bed, allowing the oxygen concentrator machine to integrate into any home or clinic layout.

THEORY & METHOD

Theory and Method

The ToronOC™ 5L oxygen concentrator produces medical-grade oxygen using pressure swing adsorption (PSA), the established method for separating oxygen from atmospheric air. Ambient room air contains roughly 78% nitrogen, 21% oxygen, and 1% other gases; the PSA cycle isolates the oxygen fraction and discharges the nitrogen back to the surrounding environment.

Inside the concentrator, an oil-less compressor pressurizes filtered room air and feeds it into a column packed with zeolite molecular sieve. The zeolite preferentially adsorbs nitrogen at elevated pressure, allowing oxygen-enriched gas to pass through to a product reservoir. A second column then desorbs the captured nitrogen at lower pressure, regenerating the sieve for the next cycle.

Two columns alternate continuously between adsorption and regeneration, producing a steady output of oxygen at 93% ($\pm 3\%$) concentration. The oxygen concentrator machine controls the cycle through a solid-state valve manifold, with timing optimized for the 0.5 to 5 L/min flow range.

The product gas passes through a flow regulator and then through the humidifier bottle, where a 6 PSI pressure relief valve protects the patient circuit from over-pressurization. A flowmeter on the front panel provides direct visual confirmation of

delivered flow, while the LCD displays operating status, treatment time, and any active alarms.

Onboard sensors monitor oxygen concentration, output flow, and temperature throughout the cycle. If oxygen purity drops, flow falls below the prescribed setting, mains power is lost, or internal temperature exceeds the safe operating envelope, the concentrator triggers an audible and visual alarm and adjusts the cycle to protect both the patient and the device.

Operating Method Steps

- Site Preparation — Place the oxygen concentrator on a flat, stable surface in a well-ventilated area, clear of curtains, walls, and heat sources by at least 30 cm. Confirm that the rear air intake and side exhaust vents are unobstructed.
- Humidifier Setup — Fill the humidifier bottle with distilled water between the minimum and maximum lines, then secure it to the outlet port. The 6 PSI pressure relief design protects the patient circuit if downstream tubing becomes blocked.
- Cannula Connection — Attach the nasal cannula or supply tubing to the humidifier outlet. For HFNC or HBOC integration, route the supply tube to the connected device per its operating instructions.
- Power-On and Self-Test — Connect the unit to a grounded mains outlet and switch it on. The LCD displays the boot sequence and the concentrator runs an internal self-test before delivering oxygen at the default flow rate.
- Flow Adjustment — Set the prescribed flow rate using the flow control knob, reading the value from the calibrated flowmeter. The flow can be adjusted between 0.5 and 5 L/min in continuous operation.
- Operation and Monitoring — Monitor the LCD for treatment time, flow rate, and any active alarms during therapy. The audible alarms for power failure, high or low pressure, low oxygen concentration, low flow, and high temperature alert the user to any deviation from the prescribed setpoint.
- Shutdown and Maintenance — After therapy, switch off the unit, disconnect the cannula, and empty the humidifier bottle. Clean the external air filter on the schedule defined in the user manual to maintain output purity and airflow.

TECHNICAL SPECIFICATIONS

Home Oxygen Concentrator - ToronOC™ 5L Technical Specifications

The complete technical specification of the ToronOC™ 5L oxygen concentrator is summarized below by subsystem.

Oxygen Output	
Flow Rate Range	0.5 – 5 L/min, continuously adjustable
Oxygen Concentration	93% (±3%) across full flow range
Outlet Pressure	0.04 – 0.07 MPa
Output Mode	Continuous flow
Acoustic and Power	
Sound Level	≤ 43 dB(A)
Power Consumption	≤ 480 W
Voltage	AC 110 V / 60 Hz or AC 220 V / 50 Hz (configurable)
Physical and Environmental	
Net Weight	16 kg
Dimensions (W × D × H)	348 × 280 × 510 mm
Mobility	Four-direction castors
Operating Environment	Indoor home and clinical use
Duty Cycle	24/7/365 continuous operation
User Interface	
Display	LCD display with flow rate, treatment time, and alarm status
Flowmeter	Front-panel calibrated flowmeter, 0.5 – 5 L/min
Controls	Power switch and flow adjustment knob
Humidification	

Humidifier Bottle	Integrated, refillable with distilled water
Pressure Relief Valve	6 PSI safety relief
Alarms	
Standard Alarms	Power failure, high pressure, low pressure, low oxygen concentration
Optional Alarms	Low flow alarm, high temperature alarm
Alarm Type	Audible and visual
Compatibility	
Accessory Connections	HBOC (hyperbaric oxygen chamber), HFNC (high-flow nasal cannula)
Patient Interface	Standard nasal cannula, oxygen mask, HFNC circuit
Regulatory and Quality	
Safety Certification	ISO 80601-2-69, IEC 60601-1, IEC 60601-1-2, IEC 60601-1-11
Quality Management	ISO 13485 manufacturing system
Risk Management	ISO 14971 framework
Market Clearances	CE marking under EU MDR 2017/745; U.S. FDA listing under 21 CFR Part 868



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

