TORONTECH

HIGH FLOW OXYGEN CONCENTRATOR

High Flow Oxygen Concentrator – ToronOC™ 10L-S

10 L/min High-Flow Medical Oxygen Concentrator for Home and Clinical Use

ToronOC™ 10L-S oxygen concentrator is a high-flow, single-outlet medical oxygen device that delivers up to 10 liters per minute of medical-grade oxygen for patients on demanding therapy regimens. The unit covers a continuous flow range from 0.5 to 10 L/min at 93% (±3%) oxygen concentration, supporting both routine and elevated-flow respiratory care.

The ToronOC™ 10L-S oxygen concentrator concentrates oxygen from ambient room air using molecular sieve pressure swing adsorption, eliminating cylinder logistics and refill scheduling. The device runs from a standard wall outlet, making it equally suitable as a home oxygen concentrator, a clinic bedside unit, or a backup supply during cylinder transitions.

Innovative cooling technology supports continuous 24/7/365 operation without forced rest periods, which matters for patients on long-term high-flow oxygen therapy. A clear LCD display shows operating status and active alarms, while four-direction casters allow the unit to be moved easily between bedrooms, living rooms, and treatment areas.

The integrated humidifier with 6 PSI pressure relief, single calibrated flowmeter, and comprehensive alarm package keep the oxygen concentrator machine straightforward for patients and caregivers to operate safely. The 10 L/min capacity makes the ToronOC™ 10L-S well suited for high-flow nasal cannula (HFNC) therapy, hyperbaric chamber inlets, and severe respiratory cases requiring elevated oxygen delivery.

0.5–10 L/min OXYGEN FLOW RANGE	**93% (±3%)** OXYGEN CONCENTRATION	**≤50 dB** SOUND LEVEL	**≤880 W** POWER CONSUMPTION

APPLICATIONS

High Flow Oxygen Concentrator – ToronOC™ 10L-S Applications

The ToronOC™ 10L-S oxygen concentrator extends standard 5 L/min therapy into the high-flow range required by demanding clinical and home care cases. The 10 L/min capacity supports HFNC, HBOC, and severe respiratory recovery applications without sacrificing oxygen purity.

- High-Flow Long-Term Oxygen Therapy: Provides continuous oxygen flow up to 10 L/min for patients prescribed long-term oxygen therapy (LTOT) at elevated flow rates, supporting COPD, severe emphysema, and advanced chronic bronchitis cases.
- Pulmonary Fibrosis Management: Delivers stable medical-grade oxygen above 90% concentration for pulmonary fibrosis patients whose oxygen demand exceeds the range of standard 5 L/min concentrators.
- Post-COVID and Severe Respiratory Recovery: Supports recovery from severe viral pneumonia and post-COVID respiratory complications requiring sustained moderate-to-high flow oxygen at home.
- High-Flow Nasal Cannula (HFNC) Therapy: Connects to HFNC circuits to supply stable high-concentration oxygen for patients requiring elevated flow rates with controlled humidification.
- Hyperbaric Oxygen Chamber (HBOC) Sessions: Couples with hyperbaric oxygen chambers to rapidly elevate blood oxygen saturation during clinical, wellness, sports recovery, and adjunctive therapy programs.
- Clinic, Nursing Home, and Hospice Use: Functions as a dedicated bedside oxygen concentrator machine in outpatient clinics, dental offices, nursing homes, and hospice care facilities where cylinder logistics are impractical.
- Sleep Apnea and Nocturnal Oxygen: Pairs with CPAP and BiPAP systems to supply supplemental oxygen during sleep, helping maintain SpO_2 levels for patients with sleep-related hypoxemia.
- Veterinary High-Flow Care: Supports oxygen supplementation for medium and large animals during anesthesia recovery, post-surgical care, and respiratory treatment in veterinary clinics.

CAUTION
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ToronOC™ 10L-S
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FEATURES

High Flow Oxygen Concentrator – ToronOC™ 10L-S Key Features

The ToronOC™ 10L-S combines high-flow clinical performance with practical home use ergonomics. The features below cover output stability, capacity, accessory compatibility, and continuous-duty reliability.

Here is the information formatted as a bulleted list:

- Wide High-Flow Range (0.5–10 L/min): Continuous flow adjustment from 0.5 to 10 liters per minute extends the device beyond standard 5 L/min units, supporting elevated-flow therapy without splitting outlets or stacking devices.
- Medical-Grade Oxygen Output (93% ±3%): Stable oxygen concentration above 90% is held across the full flow range, including at the 10 L/min upper limit where lower-capacity oxygen concentrators lose purity.
- Quiet Operation (≤50 dB): Low operating sound level under 50 dB allows the home oxygen concentrator to run continuously in bedrooms and living spaces without disturbing the patient, family, or clinical staff.
- 24/7/365 Continuous Duty: Innovative cooling architecture allows uninterrupted high-flow operation around the clock, supporting long-term oxygen therapy regimens without forced rest cycles.
- Energy-Aware Performance (≤880 W): Maximum power draw under 880 W keeps household running costs predictable for high-flow operation and allows the unit to run from common 120 V or 220 V mains 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.
- Calibrated Front-Panel Flowmeter: A direct-reading flowmeter provides visual confirmation of delivered flow, simplifying setup, prescription verification, and routine monitoring during therapy.
- 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.
- Four-Direction Castors: Heavy-duty casters allow the oxygen concentrator for home use to be repositioned between bedroom, living room, and clinic spaces without lifting.

- HFNC and HBOC Compatibility: Output couples with high-flow nasal cannula systems and hyperbaric oxygen chambers, extending the device into specialty therapy programs requiring elevated flow.
- 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 for High-Flow Capacity: A 365 × 375 × 600 mm cabinet and 27 kg net weight package full 10 L/min capability into a footprint that fits naturally beside a clinic bed or home care chair.

THEORY & METHOD

Theory and Method

The ToronOC™ 10L-S 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 and 21% oxygen; the PSA cycle isolates the oxygen fraction and discharges 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.

The two columns alternate continuously between adsorption and regeneration to produce a steady output of oxygen at 93% (±3%) concentration. The cycle is sized for a 10 L/min capacity, allowing the oxygen concentrator to maintain stable purity even at the high end of the flow range where lower-capacity units typically lose concentration.

The product gas passes through a single flow regulator and then through the humidifier bottle, where a 6 PSI pressure relief valve protects the patient circuit from over-pressurization. A calibrated flowmeter on the front panel provides direct visual confirmation of delivered flow, while the LCD displays operating status, accumulated treatment time, and any active alarms.

Onboard sensors monitor oxygen concentration, output flow, internal pressure, and temperature throughout each cycle. If any parameter falls outside the safe envelope — power loss, low oxygen purity, abnormal pressure, or elevated internal temperature — the concentrator triggers an audible and visual alarm and adjusts the cycle to protect both patient and 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 line 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 oxygen 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 continuously from 0.5 to 10 L/min.
- Operation and Monitoring — Monitor the LCD for treatment time, flow status, and any active alarms during therapy. The audible alarm package alerts the user to any deviation from the prescribed setpoint, including power failure, abnormal pressure, and low oxygen concentration.
- 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

High Flow Oxygen Concentrator – ToronOC™ 10L-S Technical Specifications

The complete technical specification of the ToronOC™ 10L-S high-flow oxygen concentrator is summarized below by subsystem.

Oxygen Output	
Flow Rate Range	0.5 – 10 L/min, continuously adjustable
Number of Outlets	1 (single outlet)
Oxygen Concentration	93% (±3%) across full flow range
Outlet Pressure	0.04 – 0.07 MPa
Output Mode	Continuous flow
Acoustic and Power	
Sound Level	≤ 50 dB(A)
Power Consumption	≤ 880 W
Votlage	AC 110 V / 60 Hz or AC 220 V / 50 Hz (configurable)
Physical and Environmental	
Net Weight	27 kg
Dimensions (W × D × H)	365 × 375 × 600 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 – 10 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	HFNC (high-flow nasal cannula), HBOC (hyperbaric oxygen chamber)
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

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