This guide provides you with basic instructions on how to set up and operate the Precision Flow® Plus. Before operating the Vapotherm Precision Flow® Plus, please review the Operating Instruction Manual which can be found at our website www.vapotherm.com and on the USB drive provided in the Start-Up Kit.
**CANNULA FLOW RATES**

<table>
<thead>
<tr>
<th>CARTRIDGE FLOW RATES</th>
<th>CANNULA TYPE</th>
<th>OPERATIONAL FLOW RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Flow</td>
<td>Adult, Pediatric/Adult Small, Pediatric Small*</td>
<td>5-40 liters per minute (LPM)</td>
</tr>
<tr>
<td>Low Flow</td>
<td>Premature, Neonatal, Infant, Intermediate Infant, Solo, Pediatric Small*</td>
<td>1-8 liters per minute (LPM)</td>
</tr>
</tbody>
</table>

*Pediatric Small cannula is intended to deliver flow rates of 1-20 lpm

**ALARM ICON**

- **GENERAL FAULT**
  - and – IN FLOW (FLASHING)
- **GENERAL FAULT**
  - and – IN TEMP (FLASHING)
- **WATER OUT**
- **DISPOSABLE WATER PATH**
  - (FLASHING)
- **BATTERY CHARGING**
  - (STEADY)
- **BATTERY**
  - (FLASHING)
- **BLOCKED TUBE**
  - (FLASHING)

**WARNING**

- **INDICATES CAUSE**
  - Internal component failure
  - Depleted or defective O₂ sensor
  - Overheating or temperature sensor malfunction
  - Sterile water empty, or obstructed inlet tube
  - Disposable water path faulty or not detected.
  - Unit will not run.
  - AC power is disconnected
  - Obstructed or kinked cannula/delivery tube, incorrect cannula for flow rate or DPC improperly seated
  - High back pressure

**ACTION**

- Cannot be corrected by user: disconnect patient. Shut off unit, send for service.
- Reset by shutting off unit. Replace O₂ sensor. Restart unit.
- Cannot be corrected by user: disconnect patient. Shut off unit and send for service.
- Disconnect patient. Replace water bag or straighten inlet tube. Restart unit.
- If disposable water path is present, remove and replace to reset detector.
- The internal battery backup is not fully charged. The unit would not run on battery for the full rated time in the event of a power failure. No action is necessary.
- Reconnect AC power.
- Clear obstruction, check cannula type, re-install DPC.

**ALARM ICON**

- **CARTRIDGE FAULT**
  - Cartridge and/or DPC not detected. Unit will not run.
  - Gas bubbles in water circulation. Unit continues to operate.
  - Excessive gas diffusion through cartridge fibers.
  - Cartridge and/or DPC not detected.
  - STANDBY mode: missing cartridge.

**WARNING**

- **INDICATES CAUSE**
  - Gas supply pressure outside 4-85 psi (28-586 kPa) range.
  - Gas supply is disconnected or exhausted.
  - Gas supply pressure too low for selected flow rate.
  - User enters set point much lower than previous temperature.
  - Temperature 2° < set point

**ACTION**

- Gas supply is disconnected or exhausted. Check gas supply and correct as necessary.
- Increase gas pressure or decrease flow setting.
- Silence alarm and wait for temperature to drop.
- Silence alarm and wait for temperature to rise.
- Decrease flow setting.
- Increase gas pressure or decrease flow setting.
- User enters set point much lower than previous temperature.
- Silence alarm and wait for temperature to drop.
- Silence alarm and wait for temperature to rise.

**GENERAL FAULT ALARMS:** Failures in the control or measurement systems will cause a General Fault alarm indicated by this icon accompanied by the Temp display showing numbers between 50 & 84 (error codes) and dashes in O₂ and Flow displays. When an error code is displayed, gas delivery is stopped. The user needs to monitor the treatment and respond to general fault alarms. General Fault alarms cannot be silenced with the mute button. To reset, first disconnect the unit from AC power and then press the Run/Standby Button. With the exception of O₂ sensor replacement, the unit must be repaired by an approved service facility.

**INDICATIONS, WARNINGS AND CAUTIONS**

**Primary Indications:**

Precision Flow® Plus is intended for use to add warm moisture to breathing gases from an external source for administration to a neonate/infant, pediatric and adult patients in the hospital, subacute institutions, and home settings. It adds heat and moisture to a blended medical air/oxygen mixture and assures the integrity of the precise air/oxygen mixture via an integral oxygen analyzer. The flow rates may be from 1 to 40 liters per minute via nasal cannula.

**Contraindications:**

General: Precision Flow® Plus: None Known

Specific to Nasal Cannula: Patients with occluded or defective nares should not use the system.

**Additional patient monitoring is necessary if the Precision Flow® Plus is used to give supplementary oxygen.**

**Precision Flow® Plus is not MRI compatible.**

**Precision Flow® Plus**

**Packaging contains:**

- Operating Instruction Manual on USB
- Quick Reference Guide
- Air & Oxygen Inlet Particulate Traps with Connectors
- O2 Sensor cell
- Quick Set Up Sticker
- Delivery Tube clip
- English speaking countries only)
- Nurse Call / EMR Communication Cable