

AEROMEDICAL TRANSPORT VENTILATORS ANNEX A - REQUIREMENTS

1. REQUIREMENT

- A. The Canadian Armed Forces (CAF), through the Canadian Forces Health Services Group (CF H Svcs Gp), has a requirement for 15 Aeromedical Transport Ventilators (ATV) with options to purchase up to an additional seven (7) ATVs.

2. BACKGROUND

- A. The Department of National Defence (DND) currently holds 87 ATVs in use across the Health Services with the age of these devices dating back to 2011. These ventilators are used at units that have a high rate of deployment such as Canadian Joint Incident Response Unit, 1 Canadian Field Hospital, AE Flt Trenton, and deployed ops. They are the only Health Canada approved ventilators with Chemical, Biological, Radiological, and Nuclear (CBRN) equipment connection capabilities. The procurement of this equipment will be used to lifecycle the existing holdings and provide to CAF medical units without one.

3. CERTIFICATIONS AND LICENCES

- A. The ATVs must have the following certifications:
- (i) Canadian Standards Association (CSA) certification (www.csagroup.org/global/en/about-csa-group/certification-marks-labels), or an equivalent proof of certification or proof of equivalency that must be recognized by the Standard Council of Canada (SCC) (www.scc.ca);
 - (ii) The device must have approved air worthiness certification under RTCA/DO-160, or a similar accepted equivalence for standard environmental test conditions and applicable test procedures for airborne equipment; and
 - (iii) Have a license of medical device granted by Health Canada.

4. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

- A. The ATVs must include the following specifications:
- (i) Weight: The total weight of the ventilator must not exceed the 6 kg including the external batteries and excluding the external power supply;
 - (ii) Must have compliance with CAF Air Worthiness (AW) standard, where the device must pass a multitude of tests including operating temperature, altitude compensation, and interference effects on any of the aircraft instruments;
 - (iii) Must have AW compliance for the following airplanes:
 - (a) C150 Polaris;
 - (b) C144 Challenger;
 - (c) CC177;
 - (d) C130 Hercules; and
 - (e) C130J Hercules;

- (iv) The AW compliance must be applied for the following helicopters:
 - (a) CH147 Chinook,
 - (b) CH146 Griffin, and
 - (c) CH149 Cormorant;
- (v) Operating temperature must be in range (minimum) of -5°C to 40°C; and
- (vi) Long term storage must be in the range of -15°C to 25°C.

5. FEATURES

A. The ATVs must have the following characteristics:

- (i) Must have a Liquid Cristal Display (LCD) as visual interface with the user;
- (ii) The LCD display must be able to present; menu control with instructions and help for the user;
- (iii) The LCD display must be able to present pressure measurement data;
- (iv) The LCD display must be able to present Pulse Oximetry and Heart Rate Data;
- (v) The ventilator must have altitude pressure compensation up to 7,600 meters;
- (vi) The ventilator must have a flow rate from 0 to 100 LPM as minimum range;
- (vii) The ventilator must have the capability to show simultaneously FiO₂, Tidal Volume, BPM, PEEP and also the battery status;
- (viii) The ventilator must have the option to attach a CBRN filter, NATO No 4240-01-361-1319, filter to the air compressor inlet; and
- (ix) The AT must have a quick start function; operator saved parameters that will allow ventilating of an adult patient with one touch of the button.

6. CONTROLS

A. The ATVs must have the following controls:

- (i) Pressure level: range (minimum) from 1 to 60 cm H₂O;
- (ii) Tidal volume: range (minimum) from 50 to 1,500 ml;
- (iii) Ventilation rate: range (minimum) from 1 to 60 breaths/min;
- (iv) Manual breath trigger;
- (v) Inspiratory time: range (minimum) from 0.3 to 3 seconds;
- (vi) Positive End Expiratory Pressure (Peep): range (minimum) from 0 to 25 cm H₂O;
- (vii) Pressure support: range (minimum) from 1 to 60 cm H₂O;
- (viii) Fraction of Inspired Oxygen (FiO₂): range (minimum) from 21 to 100% (+/- 2% tolerance);

- (ix) Inspiration / Expiration ratio (IE): from 1:1 to 1:99; and
- (x) Triggering mechanism by gas flow.

7. OPERATING MODES

- A. The ATVs must be able to operate in the following modes:
 - (i) Assist Control (AC) mode: with Volume and Pressure targets;
 - (ii) Synchronized Intermittent Mandatory Ventilation (SIMV) mode: augmenting the respiratory rate by Volume and Pressure targets with/without Pressure Support;
 - (iii) Continuous Positive Airway Pressure (CPAP) mode: with/without Pressure Support;
- B. Deliverable Gas(es): The ventilator must be able to deliver gas(es):
 - (i) Air (by internal compressor);
 - (ii) Able to deliver oxygen from high pressure source (by external 55 psi from -25% to 25% concentration); and
 - (iii) Able to deliver oxygen at low pressure (i.e. from an oxygen concentrator).

8. ALARMS

- A. The ATV alarms must have the following characteristics:
 - (i) All alarms must be visual (by LED seven segment display) and audible (must be >80 dBA at 1 meter);
 - (ii) Must have a visual alarm for non-operating failure status;
 - (iii) Must have operational alarms; and
 - (iv) Must have advisory operational alarms.

9. POWER SUPPLY

- A. The ATV power supplies must have the following characteristics:
 - (i) Weight of power supply must not exceed 0.6kg;
 - (ii) Powered by 100 VAC to 240 VAC @ 50 or 60 or 400 Hz;
 - (iii) Powered by 11 VDC (minimum) to 35 VDC (maximum); and
 - (iv) Must have a battery operating time of 8 hours (minimum).

10. OTHER REQUIREMENTS

- A. The ATVs must include a soft carry case with padded inserts for power supply.

11. OPTIONAL ACCESSORIES

- A. A hard plastic case must be available for purchase to hold all the ventilator items.

12. REFERENCE MANUALS

- A. The following Manuals must be included with each ATV:
- (i) One (1) Operating Manual: as a minimum the operating manual must include information on handling the device, error code explanation, troubleshooting, and recommended operator maintenance; and
 - (ii) One (1) Service Manual, electronic PDF preferred: as a minimum the service manual must include a detailed explanation of the internal device workings, disassembly and re-assembly instructions, detailed schematics, and a parts breakdown, including part numbers, for each component.

13. LICENCE

- A. The Contractor must grant a perpetual, non-revocable license to use, reproduce, and translate the training, technical and reference manuals, materials and documents.

14. DELIVERY LOCATION AND SCHEDULE

- A. The initial ATV devices must be delivered on or before 31 March 2018. Optional units must be delivered within 60 days of Contract amendment; and
- B. The devices must be delivered at the following address:

Central Medical Equipment Depot
105 Montgomery Road, Building BB104A
Canadian Forces Base Petawawa
Petawawa, ON K8H 2X3