

## GENERAL

**SuperCritical Air Mobility Pack (SCAMP) SCBA Open Cycle****Model:** 563001A03; 563-001-03 (stock #)

Supercritical Thermal Systems, Inc.  
 P.O. Box 2627  
 Longmont, Colorado 80502  
 Dr. Hal Gier  
 970-535-0384 (Tel)  
 970-535-0386 (Fax)  
 HalG@superthermal.com

**Information Source:** <http://www.superthermal.com>**Vendor Status:** The vendor has responded**Availability:** SCAMPs will be manufactured on demand with a 90 d lead time; minimum order of 6 SCAMP units. There will be a loading station to support units.**NIOSH Status:** Units are built and are in pre-test**NIOSH CBRN Number(s):**

TC-84A-3337 (basic 42 CFR Part 84 approval)  
 NIOSH approved under part number 563001O2

**Certification Date:**

Units are built and are pre-tested

**Breathing Air Cycle (PSIG):**

- 750 psig; this is a cryogenic system, the breathing air cylinder operates at 750 psig

**Duration Rating:**

- 30 min
- 60 min
- 120 min units will be made

**Unit Cost:** \$7K**Other Certifications:** NIOSH certification: TC-84A-3337**Configuration Tested:** The SCAMP unit has been tested at NIOSH under Part number 563001O2. The SCAMP has been modified to meet NIOSH objections and is being prepared for resubmittal.

Face Piece—FM.9034.06—CamLock CB40-PP-CNR—\$250

Second Stage Regulator, CDV—FM.066.00—(ISI Compact Demand Valve, 160072)—\$200

Air Bottle, Cryogenic Dewar—563-101-4—(4 L Cryogenic Dewar for SC Air)—\$3K

Back Pack Assembly—563-301-4—(1 h Backpack with Body Cool)—\$3K

Coolant Transfer Tubes—547-006—(Pair of Backpack to Cool Suit Tubes)—\$100

Cool Suit—547-005—(Tube Suit to Provide Body Cooling)—\$800

**Related Ensembles:** No third party certification

**PAPR Description:** The SuperCritical Air Mobility Pack® (SCAMP) SCBA uses cryogenic breathing gas technology originally developed for NASA's Apollo and Space Shuttle programs. The SuperCritical Air Mobility Pack® (SCAMP) provides at least 1 h of breathing air while cooling the wearer's body. Although the SCAMP is somewhat smaller and lighter than traditional SCBA, it has more capacity. The SCAMP uses supercritical fluid technology. A high temperature fiberglass backpack contains the SCAMP dewar, a tank that holds the supercritical air [-196 °C (-320 °F)] and replaces the standard SCBA high-pressure tanks. Low system pressure forces the super-cold air out of the dewar and through a series of heat exchangers, which warm the air to a comfortable breathing temperature while the other side of the heat exchangers cool the body through the use of a liquid-cooled garment. The heat exchangers have no moving parts and the system doesn't require user controls. A lighted display on the backpack's harness indicates how much air is left, and an alarm sounds when the tank is less than 25 % full. The vessel can be quickly filled. The SCAMP SCBA 1 h Dewar is approximately the size of a standard 30 min SCBA.

**PAPR Application:** Flammable environment, fused munitions, explosive atmospheres, IDLH environments or atmosphere with less than 19.5 % oxygen concentration, radiation, biological, deep frozen media, and other

**Cylinder Options:** No details**EOD Capability:** Not EOD compatible

## OPERATIONAL CAPABILITIES

**Hazard/Threat Protection Categories:** CA, BA, TIC/TIM, and radiological**Protection factor:** LRPL testing not performed at U.S. Army's Protection Factor Test Facility

## DESIGN/CONFIGURATION

**Visor:** Rigid, optical grade polycarbonate visor contains anti-scratch coating for scratch resistance; spectacle kit (Part No.12.001.00) is available

**Field of View:** >85 %—FOV. Visual acuity meets eye test performance criterion.

**Facepiece Compatibility:** At this time, there are no products certified with CB40 mask in the APR and/or PAPR configurations. Masks may be freely interchanged between backpacks; with slightly more difficulty it will be possible to interchange the second stage regulator also.

**Interoperability with Equipment:** Not specified

**Heads up Display:** A HUD will be mounted on the inside of the facepiece with integral wiring. The display will have 10 LEDs of various colors (green—55 % to 105 %, orange—25 % to 55 %, red—0 % to 25 %) for quantity display. In addition there will be 4 status display LEDs to give status of mask temperature, mask pressure (high, low), and battery voltage. The batteries will be 6 alkaline AA batteries with a nominal lifetime of 5 h.

**Battery Requirements:** Quantity sensor and alarms—6 alkaline AA batteries with a nominal lifetime of 5 h

**Indicator Alarms:** For low quantity, pressure is not a good indicator of cryogenic quantity; therefore the SCAMP has a combination of visible, audible, or vibratory alarm for low quantity; visual alarm is in mask HUD; audio alarm is in front of pack, behind ears. Performance of the indicators has not been tested under cold conditions [-30 °C (-22 °F)].

## HUMAN FACTORS

**Communication:** No voice amplifier; speech intelligibility testing has been performed using NIOSH's test method

**Sizes Available:** Small and large

**Don/Doff Information:** Not specified

**Comfort/Weight:** Not specified

**Training Requirements:** Not specified

**Training Available:** Training is available for using the SCAMP, loading the SCAMP, and routine maintenance. Customized training provided by the manufacturer is included in the sale at an additional cost. No minimum order is required for the training. Training CD's are available.

**Manuals:** User instructions are available as a manual and/or CDs. Maintenance manual (hard copy and/or electronic) and CDs are available.

## LOGISTICS

**Maintenance Required:** General surveillance required before and after each use; every 3 yr to 5 yr for vacuum maintenance of dewar

**Maintenance/Technical Support:** 24 h tech support at 970-535-0384 will be available when deliveries start  
Maintenance requirements will be determined by the technical support call; field repairs will be available

**Maintenance Cost:** Not specified

**Use/Reuse:** Not specified

**Shelf Life:** Greater than or equal to 15 yr; requires nothing more than normal storage conditions

**Storage Conditions:** Not specified

**Package Shape/Volume:** Not specified

**Color:** Not specified

**Health Hazards and Safety:** Not specified

**MSDS:** MSDS is available

**Warranty:** Not specified