

# Backpack Individual Cooling System

## OPERATION MANUAL



Model No:COMP-LCU-12100C



COMPCOOLER

## **Compcooler Technology**

Compcooler Technology specializes in working for personal cooling & heating systems for harsh conditions. Compcooler has established its resume as a manufacturer for Military, Electronic, Medical cooling equipment. The employees at Compcooler's state of the art manufacturing facility have been producing liquid heating & cooling systems over 15 years. Quality system: ISO9001 and AS9100 registered facility. Certifications for major items: CE, FCC, UL, PSE, CB, FDA.

### **Product Categories**

1. ICE Water Circulation Systems
2. Micro Refrigeration Chiller Units
3. Liquid Heating Systems
4. Liquid Cooling & Heating Garment and Pad
5. Customized Cooling Systems
6. Industrial Chiller or Cooling Module

Customize Cooling and Heating System, MOQ 50 sets  
Micro Refrigeration Cooling System  
Please contact : [simonsun@compcooler.com](mailto:simonsun@compcooler.com)

**Compcooler, Keep your body cool in extreme hot conditions!**

**Descriptions:**

Compcooler Backpack Individual Cooling System (BICS) specifically designed for portable body cooling application, BICS includes Mini Chiller Units, Liquid Cooling Vest and Rechargeable Battery. Micro refrigeration system cools the flow liquid, pump circulates the chilled water go through the liquid cooling vest and continuously flow around the body, this may keep the user at comfortable range. Mini chiller delivers 100W cool capacity, precise liquid temperature control from 5°C to 30°C (41°F to 86°F) accuracy +/-1°C (2°F), once circulation liquid reaches to set point temperature, system intellectually control the cooling capacity to that temperature. This model is good for body cooling application by battery or vehicle power operated.

**Key Features:**

|   |   |
|---|---|
| <p><b>Compact Mini Chiller Unit</b><br/>The smallest micro refrigeration chiller unit, compact and rugged design</p>              | <p><b><u>Camouflage Cooling Vest</u></b><br/>Back and front vest design, 3D fabric interlayer, quick take off from shoulder</p> |
| <p><b><u>Excellent Cooling Capacity</u></b><br/>High cooling performance with low power consumption, Battery or vehicle power</p> | <p><b><u>Ergonomically design</u></b><br/>Backpack cooling system design, easy don for portable application</p>                 |
| <p><b><u>Smart System Control</u></b><br/>Manual temperature setting for chiller unit, Intelligent system control</p>             | <p><b><u>Safety and Healthy</u></b> Clean chilled water circulation system, Astronaut and Military story</p>                    |

## Components list

| Item | Description                        | Quantity |
|------|------------------------------------|----------|
| 1    | Mini Chiller Unit with controller  | 1        |
| 2    | Backpack                           | 1        |
| 3    | Liquid Cooling Vest                | 1        |
| 4    | Battery 12V 10A                    | 1        |
| 5    | Charger 110V-220V                  | 1        |
| 6    | 12V Vehicle Cord Package(optional) | 1        |
| 7    | Manual                             | 1        |



Mini Chiller Unit with controller



Liquid Cooling Vest



Backpack



Battery



Charger

## Mini Chiller Unit Specifications

- Compressor: DC 12V Miniature Rotary Compressor
- Voltage Range: 10-16V
- Operation Current: 3-8A (10A max)
- Cooling Capacity: 50-150W
- Refrigerant Control: Capillary Tubing
- Temperature Control: 5°C-30°C (41°F-86°F)
- Controller: manual
- Pump: 12V Centrifugal pump, 1L/min
- Fan: 2pcs 12V Fans
- Unit Case: Aluminum Machining
- Color: Desert Tan and Black
- Power Connector: Aero Fitting
- Quick fitting: CPC Medical Grey fitting 1/4"
- Noise: 48dBA
- Dimension: 180x88x174mm
- Weight: 2.5kgs



### Chiller Control:

- System start: Full speed to start chiller operation
- Temperature setting: Slow speed when temperature close to setting
- Lower temperature:  
liquid temperature lower than 3°C(6°F), compressor will stop
- Restart: liquid temperature 1°C(2°F) higher than setting, compressor will restart.

### Battery Specifications

- Rechargeable Battery: Li-Ion 12V DC, 10A
- Voltage: 12V Aero connector, 7.4V 4017 plug, USB 5V
- Max output: 20A@12V, 3A@7.4V and USB5V
- Battery Case: Aluminum Machining
- Remaining Capacity Checking: 3 led lights
- Charging: 12V Car Charging and 110/220V AC charging
- Color: Desert Tan and Black
- Weight: 150\*5.7\*80cm
- Size: 1.0Kg

## Camouflage Liquid Cooling Vest

### COM-CLCV-702

- Material: Military Camouflage Water Proof Fabric
- Interlayer: 3D Fabric
- Liner: soft mesh 85% Nylon, 15% Spandex
- Cooling Channel: four zones silicon tubing
- Adjustable device: Stretch strap with Velcro
- Quick release: Right shoulder
- Manifold fitting: 1 to 4, Aluminum
- Quick fitting: CPC Grey Medical Fitting 1/4"
- Weight: 800g
- Vest Size: XS/S, M/L, XL/2XL, 3XL/4XL

## Mesh Liquid Cooling Vest

### COMP-MLCV-801

- Material: Soft Stretch Mesh
- Color: Dark Green Outer and black liner
- Cooling Channel: Silicon tubing 3x5mm
- Zipper: YKK reversible zipper
- Adjustable device: stretch body fit strap
- Fitting: White quick fitting for Inlet and outlet
- Manifold fitting: Aluminum machining
- Dry weight: 0.5kg
- Size: XS/S, M/L, XL/2XL, 3XL/4XL

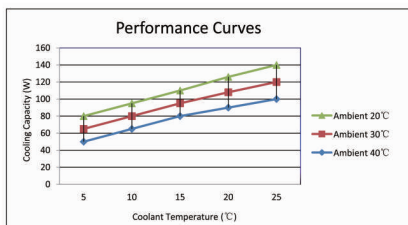
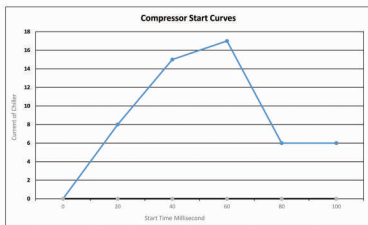
## Cooling Performance

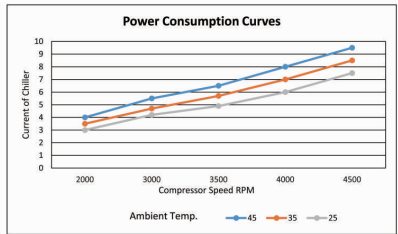
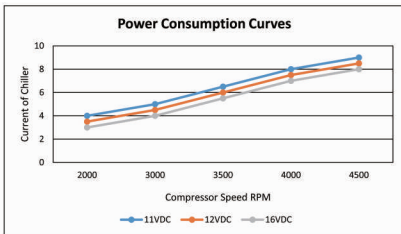
- Cooling Time: 2-3hours by 12V 10A battery  
Unlimited by vehicle power
- Temperature setting: 5°C-30°C (41°F-86°F)
- Liquid circulation: 800ml/min
- Operation Ambient: 0°C-45°C (32°F-122°F)

## Garment Size

| Item   | XS/S       | M/L         | XL/XXL      | 3XL/4XL     |
|--------|------------|-------------|-------------|-------------|
| Chest  | 84cm/33.1" | 100cm/39.4" | 108cm/42.5" | 123cm/49.6" |
| Length | 64cm/25.2" | 68cm/26.8"  | 70cm/27.6"  | 73cm/28.8"  |

**Note: Garment size has 30% expansion stretch by fabric (10cm/4"Max) or adjustable**





## Operation Processes

### Preparation

#### 1. Battery Charging

Full Charge of battery, LED light of charger change from RED to GREEN

(TIPS: press "Remaining Battery Capacity" on battery, 3 Led lights means Full.)



#### 2. Connect Mini Chiller Unit with battery and liquid cooling vest as below:

(TIPS: This is Auto lock power connector, you need to move the ring back about 0.25" then pull it out,

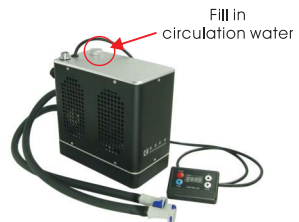


#### 3. Fill in circulation water (two times) for the first time operation.

Step 1: open the filler cap, fill in water, turn on switch to start pump circulation, water flow from reservoir to cooling vest.

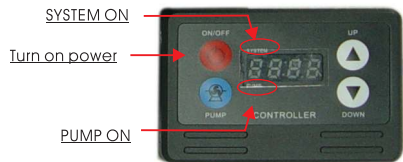
Step 2: it is the time to re-fill in water from filler cap to full  
Step 3: disconnect the battery and vest with mini chiller unit

(TIPS: you can use it now if battery has enough power.)



## Operation:

1. Put on cooling vest, adjust sides body fit device, zip up.  
(TIPS: You may adjust the size to comfortable range, A little tight of Cooling Vest will provide better cooling performance, but not too tight, comfort is a key point.)
2. Pull on Backpack, tight strap to comfortable range, connect quick fitting with cooling vest.  
(TIPS: Insulation tube from vest and backpack may be a little longer, user may measure the size and modify the length, keep the loop better. See Modification processes as below if need.)
3. Turn on power, press up and down to set up temperature, press pump to start circulation.  
Enjoy the cooling now.  
(TIPS: Comfortable body cooling temperature range for person could be 15°C - 20°C (59°F -68°F) as per the research from Natick Soldier Center. You may start from 20°C(68°F), if it is still not cool enough for you, press down arrow to change setting. Just a friendly remind, lower temperature will need large power consumption and cause less cooling time.)



## Extend Cooling Time:

1. Replace battery: it is a quick way to extend the cooling time by replace full charged battery.
2. Vehicle power operation: This is for professional operator only! This solution may extend the cooling time ideally.  
(NOTE: please make sure your Motorcycle battery can endure 3-10A operation, peak current could be 15A 20ms when compressor start.)



3. Vehicle power charging: Package has included a vehicle power charging cord. You may use vehicle power to charge battery during operation. Max charging output from battery is 3A, it is safety for your vehicle power. This may extend 50-100% cooling time.

(NOTE: Solar charging also works fine for battery, voltage should be 12V, output should more than 2 amps, otherwise, it brings no actual cooling time enhance.)

## Clean and Maintenance

1. Backpack: User may use wet clothing to clean the backpack exterior dirty directly.

2. Filter clean: User need to use clean circulation water to run the system, there is a filter inside of filler cap prevent something into reservoir. User may disassemble the filter and clean it every 3 months.

3. Vest clean: prefer to clean by hand wash then hang dry.  
Machine washable with laundry bag,

**NOTE: NO IRON. NO DRYER**

## Components Renewal

1. Battery: User may just purchase new extra battery, connect with system

2. Mini chiller unit: user need to purchase new chiller unit to replace.

3. Liquid cooling vest: user may choose Mesh liquid cooling vest for underwear, or Camouflage liquid cooling vest for outerwear application.

(TIPS: Please check the fitting before purchase new vest, standard vest with white quick fitting, Backpack Individual Cooling System applied Grey quick fitting. You will need to contact distributor or Compcooler for special request.)

## Storage:

1. Empty the circulation water from chiller unit and liquid cooling vest. Connect battery and liquid cooling vest, open filler cap, upside down of chiller unit, turn on switch, start pump running. Circulation water will flow from filler cap, this process should last 1-3 minutes.

(TIPS: Chiller unit can work at 90 or 180 degrees over 8 hours, but not suggest long term operation like this.)

2. Open dry for chiller unit, hang dry for cooling vest over 12 hours, then pack well for storage.
3. Restart system: Restart System: after long term storage, please fill in clean water with less degerming liquid, run the system over 10 minutes, then empty the system and re-circulate with pure clean water.

### **Battery Storage**

1. Shall be in the clean and dry ventilation room at temperature 0°C-35°C (32°F-95°F)
2. Shall keep out of fire or heat and avoid touching corrosion elements
3. Shall be charged every 6 months during storage
4. Keep the battery out of children's reach

**Please STOP using the battery if any abnormal be found!**

### **Warranty**

Compcooler warrants its products 12 months under normal use from the date of original purchase. If defective, product will be repaired or replaced at Compcooler's option. This warranty is for original buyer. This warranty doesn't cover defects or damage from misuse or wrong operation. Compcooler shall in no event be liable for death, injuries to persons or property incidental or damages from the use of products.

**If purchase from distributor, please contact them directly.**

### **Caution:**

1. Please DO NOT turn ON/OFF to run or stop system frequently within a short period, it may damage the compressor system, and significant enhance power consumption, reduce cooling time.
2. Please make sure vest be connected well before start pump,
3. Please DO NOT block air inlet and outlet, it may cause compressor overheat or less cooling capacity.
4. Please use clean water for circulation, less antibiotic is fine, but no salt or corrosion liquid.
5. Please stop using battery if any abnormal condition.
6. Please DO NOT use other battery to run the system, compressor start has peak current 15A 20ms, it may damage your battery.
7. Please DO NOT run the system close to fire or under water.

**Customer Support:If you have any questions,  
please feel free to contact:info@compcooler.com**

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## FAQ (Frequently Asked Question)

| Item | Description                      | Trouble Shoot   |
|------|----------------------------------|---|
| 1    | System doesn't work              | <p>Please check the power, controller should work with power supply.</p> <ol style="list-style-type: none"> <li>1. Battery full charged check by press switch "Remaining Capacity Checking" 3 lights means full.</li> <li>2. Check the Power connection loose or not.</li> </ol>  |
| 2    | No Cooling Performance           | <ol style="list-style-type: none"> <li>1. Circulation water enough or not, easy check from filler cap.</li> <li>2. Condenser works or not, easy check hot air by hand.</li> <li>3. Compressor works or not, easy check by sound and vibration of chiller unit.</li> <li>4. Check inlet of chiller be blocked or not</li> <li>5. Check the controller temperature setting</li> </ol> |
| 3    | No pumping                       | <ol style="list-style-type: none"> <li>1. Pumps works or not, easy check liquid flow wave from filler cap. (liquid flow back inlet be placed top side of reservoir, user can see the wave by eye.)</li> <li>2. Check controller, pump ON or OFF</li> </ol>  |
| 4    | Temperature Sensor               | Temperature sensor no feedback, "P1" on the screen.   |
| 5    | Condensate water on Vest Channel | Mesh liquid cooling vest was designed for under jacket application. Vest channel may occur some condensate water if cooling vest run at exposed conditions (high humidity and hot temperature). It is a condensation physical phenomenon, not a system defect or vest leaks.  |

## **Personal Cooling and Heating System**

Keep you body cool and comfortable in harsh conditions!



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