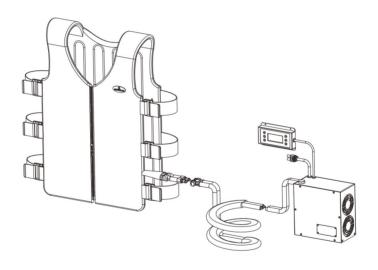
Motorcycle Rider Chiller Cooling System

Model: COMP-MRCS-12200

Operation Manual





COMPCOOLER

Personal Thermal Technology

Personal Liquid Circulation Cooling System

- Liquid Cooling Garment
- ICE Water Cooling Unit
- Mini Chiller Cooling Unit

Reduce body core temperature and decrease the incidence of thermal stress while increasing comfort, safety, focus and endurance.

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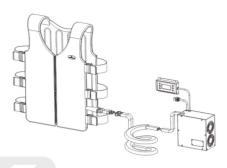
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Description

The Compcooler Motorcycle Rider Chiller Cooling System (MRCS) combines a tubing-lined vest with a compact chiller unit to form a tethered thermal regulation device.

MRCS uses a 12V vehicle battery powered mini refrigeration chiller unit housed in a handcarry pack to cool the liquid. A pump in the chiller unit circulates the cold liquid to a tubing-lined garment. The User's body heat is absorbed by the liquid and returned back to the chiller unit to be cooled again. This process continues in a closed loop as long as the system is powered 'ON'.



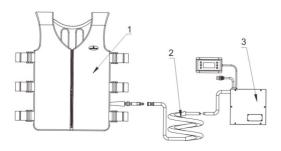
MRCS is powered 12-16V vehicle battery or rechargeable battery, and delivers 150-200W of cooling capacity. Temperature control is -9°C to 30°C (16°F to 86°F) with an accuracy of +/-1° C (2°F). The system is programmable and will automatically operate at the user's preferred temperature set point. The set point can be adjusted using a supplied remote controller.

Components List

Item	Part number	Description	Quantity
1	COMP-MRCU-12200	Micro Refrigeration Chiller Unit	1
		Handcarry Pack	1
2	COMP-MLCV-XX	Mesh Liquid Cooling Vest	1
3	COMP-ET-2M	Extension Tubing	1
4		Operation Manual	1

Component Description

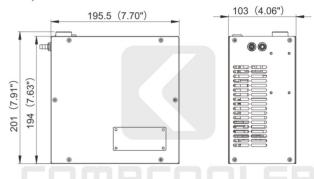
- 1. Mesh Liquid Cooling Vest Part no. COMP-MLCV-XX
- 2. Extension Tubing Part no. COMP-ET-2M
- 3. Chiller Unit Part no. COMP-MRCU-12200



Optional Components

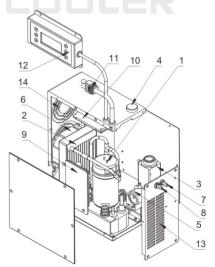
Item	Part Number	Description	
1	COMP-FBCG-XX	Full Body Cooling Garment	
2	COMP-LCT-XX	Liquid Cooling T-shirt	
3	COMP-RB-1210	Rechargeable Battery	

Dimensions, Chiller Unit



Chiller Unit Callouts

- 1. Mini Rotary Compressor
- 2. Condenser
- 3. Reservoir
- 4. Filler cap
- 5. Water pump
- 6. Fans
- Liquid inlet
- 8. Liquid outlet
- 9. Drive board
- 10. Control board
- 11. Power connection
- 12. Control pad
- 13. Air inlet
- 14. Exhaust

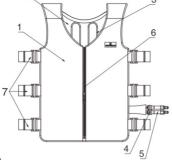


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Liquid Cooling Vest Callouts

- 1. Outer Fabric: Soft stretch mesh
- 2. Liner; Soft stretch mesh
- 3. Cooling Channel; Silicone micro-tubing
- 4. Aluminum manifold
- 5. Male quick-connect fittings
- 6. Front Zipper
- 7. Adjustable tabs



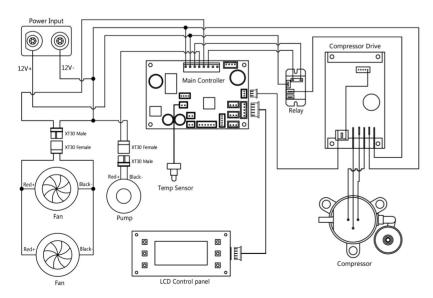
Front View

Liquid Cooling Vest Sizes

Note: Garment can expand 30% (max 10cm/4") with adjustable tabs.

Feature	XS/S	M/L	XL/2XL	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"

Chiller Control Diagram



Chiller Unit Technical Datasheet Part no, COMP-MRCU-12200

Feature	Description	
Compressor	Miniature DC Rotary Compressor	
Refrigerant	R-134a	
Cooling capacity	50-200W	
Circulation Capacity	800 ml / min	
Cooling Liquid	Water, Water/Glycol Mixtures	
Liquid Temperature	-9°C to 30°C (15.8°F to 86°F)	
Voltage	12VDC (Range 12-16.8VDC)	
Operating Current	5-20 Amps	
Max Power Consumption	240 W	
Power Connector	Break away EC5	
Cooling Liquid Connector	CPC quick fitting, 1/4"	
Refrigerant Control	Capillary Tube	
Dimension	196 x103x194mm(7.72 x 4.06 x 7.64inch)	
Weight	4.0KG (8.8lbs)	
Noise	50dBA	
Housing Materials	Aluminum	
Color	Silver or Black	
Operating Ambient Temperature	0°C to 45°C (32°F to 113°F)	
Storage temperature	-20°C to 70°C (-4°F to 158°F)	

Chiller Controls

- System start mode; full speed
- Temperature setting; chiller slows when cooling liquid nears temperature set point
- Automatic shutoff; compressor shuts off if liquid temperature is less than 3°C (6°F)
- Automatic restart; compressor restarts when liquid temperature is 1°C (2°F) higher than set point



Optional Rechargeable Battery Specifications

Part no. COMP-RB-1210 Rechargeable Battery: Li-Ion

Voltage: 12-16.8V DC Capacity: 120WH

Max Output: 20A Charging: 110/220V AC Charger 12V vehicle charger

Charging time: 4-5 hours

Battery Status: 3 lights show remaining capacity

Battery Case: Aluminum

Color: black

Weight: 0.95 Kg (2.2 lbs)

Size: 153 x 48 x 86mm (6.0 in x 1.9 in x 3.4 in)

Operation Time: 1 - 2 hours for chiller unit

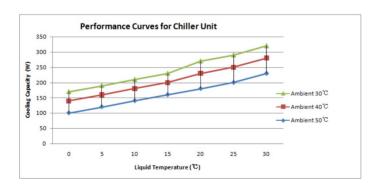
Optional Power Adapter

Part no. COMP-PA-11012 Power: 280W

DC Connector: EC5

AC Connector: US Style (EU, AU, JP)

Performance Curves for MRCS





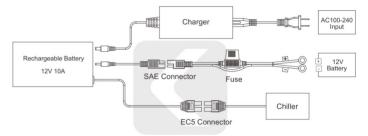
System Preparation

The following steps are to be performed prior to donning the vest for the first time:

1. 12V DC Vehicle Power Supply:

First connect the wire assemble to the vehicle power source using the EC5 cord supplied in the package. Route and secure the wire assembly in a manner that prevents damage from heat or snagging.

Connect the EC5 plug of the wire assembly to the mating EC5 plug of the chiller unit. The EC5 power connector has a quick break away feature that is easy assembled or disassembled.



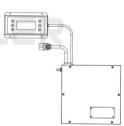
2. Powered by Battery (Optional): Charge the battery using the included charger. LED lights on the battery charer housing indicate charging progress. A red light indicates the battery is still charging. A green light indicates the battery is fully charged.

Pressing "Remaining Battery Capacity" on the battery indicates, by percentage, how full the battery is. 3 Led lights indicate 80-100% capacity, 2 lights indicate 60-80% capacity and 1 light indicate ≤ 50% capacity.

Typical charge time to 'full' is 4 hours. A fully charged battery (COMP-RB-1210) will operate up to 2 hours.

Charge the battery by using 12V vehicle power SAE connector, it increases about 50-80% of battery operation time. Please see the diagram below:

- 3. Powered by Adapter (Optional). Connect the EC5 plug of 110-220V AC to 12V DC power adapter (part no. COMP-PA-110US12EC5) to the mating EC5 plug of chiller unit.
- 4. Connect the cooling vest. Connect the flexible pair of tubes from the chiller to the cooling vest. The tubes have quick-release fittings on both ends. Simply press the button on the fitting to release it. Conversely, when connecting the fitting, an audible 'click' ensures a good connection.





While these fittings are designed to mate with Compcooler's line of personal cooling devices and garments, they may be replaced by the User for compatibility with different garments or pads. The flexible tube are 1/4" diameter, any User supplied barbed fittings must be sized accordingly.

Mount the chiller and extension tubing:

Place the chiller in the soft pack and close it shut, secure the soft pack in place (ie: on the motorcycle) using attached straps. Please do not block the air intake and exhaust on the sides of chiller.

Secure the extension tubes using the attached Velcro straps in a manner that prevents damage from heat or snagging. The extension tubes should be positioned such that there is adequate length to connect to both the chiller and the vest.

Priming the System: If using the MRCS for the first time, a two-step priming process is required. Before priming, it is imperative to understand the types of liquid to be used with the chiller.

The chiller can be set to cool liquid above, or below, the freezing point of water. Accordingly, the type of liquid to be used depends on the programmable temperature setting of the chiller. Please follow these guidelines for liquid preparation:

- Plain, clean water must be used for temperature settings above 1°C (33°F).
- Anti-freeze liquid (such as 20% glycol with 80% clean water) must be used for temperature settings below 1°C (33°F).
- Deionized water may be used for isolation applications.



DO NOT use salt water, caustic, corrosive, or flammable fluids as these will damage the IRCU and void the warranty.

Reservoir Cap

Priming Steps:

Step 1:

- a. Remove the filler cap from the top of the chiller (reference diagram at right).
- b. Using a funnel, fill the reservoir with liquid until full.
- Press the 'Pump' button on the control pad to start circulation and allow it to run for 1 minute. This allows the liquid to circulate in a closed loop between the chiller reservoir and cooling vest.
- Turn off the pump.

Step 2:

- a. Using a funnel, fill the reservoir until full. This is required since some of the liquid has been used to fill the extension tubes and cooling vest during Step 1 of the priming process.
- Replace the reservoir cap.

7. **Pre-Testing**: With the unit attached to power, turn the power switch on. Using the control pad, press "System" on to start refrigeration and press "pump" on to start circulation, use the "Temp Up/Down" buttons to set the desired cooling temperature. The temperature should come down in a few minutes and remain at that temperature in standby mode.

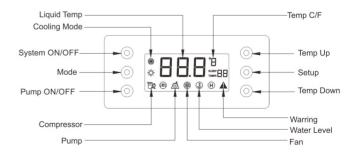
Note: This refrigeration unit has a temperature control feature that stops cooling when the liquid reaches a temperature 3°C (6°F) below the User setting and begins cooling when the liquid reaches a temperature 1°C (2°F) above the User setting.

System Operation

- 1. Don the vest; Once donned, zip the vest and adjust the tabs to create a snug fit. For optimal cooling performance, wear the vest against bare skin.
- 2. Connect cooling vest to chiller; connect the tubes on the vest to the tubes on the backpack using the quick-connect fittings. An audible 'click' of the quick-connect fittings ensures a proper connection.
- Start Pump; Press the 'Pump' button on the control pad to start or stop circulation. Ensure the guick fitting is connected in a closed loop between the chiller unit and vest before circulation begins. Make sure no kinks exist in the tubes. Otherwise, flow and cooling performance will be impeded.
- Start system; Press the On/Off switch located on the control pad to turn the system 'On'. Press the On/Off switch again to turn the system 'Off'.

The coolant must be kept running when chiller system is 'On'. Otherwise, the evaporator may freeze in less than 1 minute. Freezing of evaporator may result in no cooling performance. If freezing occurs, turn the system 'Off' and wait for the coolant to melt. Then restart the system and check the cooling performance.

5. **Temperature Setting**: Use the 'Temp' up and down buttons on the remote controller to set the desired temperature for the circulation liquid. The liquid temperature will go down to the set point in minutes.





Note: Setting is completed when number stops blinking. The steady number shows the current liquid temperature. Indicator shows the ON/OFF status of refrigerator, pump and temperature etc.

Control pad: User may mount the tethered LCD control pad in an ergonomic location that is proximate to the driver's seat using the four mounting holes in the pad frame (ref. diagram at right).

Maintenance

- 1. Cleaning; Several parts of the MRCS may require cleaning as follows:
- a. Chiller Unit; The protective metal housing of the chiller box may be cleaned with a damp cloth and alcohol-based cleaning solution.
- b. Vest; Machine washing with cold water on a gentle or delicate cycle is acceptable using a laundry bag. Hang drying is the only acceptable drying method. Do not use bleach, an iron or place the vest in a machine dryer.
- c. Handcarry pack; use a damp cloth and mild dish detergent to clean the backpack.
- d. Condenser; To keep the chiller at optimum cooling capacity, the condenser should be kept free of dust and dirt, there is a filter on the handcarry pack, if cleaning is required, open the side panel and remove the fans, use 50-100 psi compressed air to clean the contamination.



Note - always use protective eyewear when cleaning with compressed air.

- e. Reservoir; disconnect the power connector and vest to the chiller unit per instructions in the section for System Operation. Remove the filler cap from the top of the chiller and upend the unit to drain the liquid. If the liquid contains antifreeze, contain, and discard this liquid according to your local regulations.
- f. Refill the reservoir with a solution of clean water, disinfectant and/or scale remover. Allow that to dwell for 10 minutes and drain again. Leave the drain cap off and allow the reservoir to dry completely. Replace the filler cap before next use.
- Charging Refrigerant; (not recommend for uncertified operator) If the cooling capacity has been decreased due to lack of refrigerant, the MRCU will need to be recharged by a licensed refrigeration specialist using 100g of R134a refrigerant. The refrigerant charging port is also found behind this side panel.

Storage

Chiller and Cooling Vest:

- 1. Disconnect the power cord from the chiller.
- 2. Disconnect the flexible tubing between the vest and chiller.
- 3. Empty and clean the reservoir by following the instructions under Maintenance section 1.e.
- 4. Pack the unit for storage.
- 5. Restart: after long term storage the chiller reservoir should be flushed using a solution of clean water and 5% detergent. Follow Priming instruction number 4 under the section for System Preparation and allow this solution to circulate for 10 minutes with a cooling vest connected. Then empty the detergent solution (reference Maintenance section 1.e) and refill with the proper operating liquid according to the same priming instructions.

Battery Storage

- Keep in a clean, dry, and ventilated room at 0°C-35°C (32°F-95°F)
- · Keep away from any heat source
- · Do not touch corroded contacts or elements
- · Charge stored batteries every 6 months
- · Keep batteries out of children's reach



Do not use batteries if any damage or abnormalities are observed

Components Renewal

- Battery; additional batteries can be purchased from your dealer, either to replace a damaged battery or for providing extended cooling times.
- · Chiller Unit; if damaged, entire unit needs replacement. Contact your dealer for assistance.
- · Cooling vests; various types of cooling vests are available. Please reference (www.compcooler.shop/collections/liquid-cooling-garment) for vest options.

Cautions



- 1. Do not use a battery other than that which was supplied with the MRCS.
- 2. Repetitively cycling the MRCS within a short period of time (less than 3 minutes) using the 'System On/Off' button will adversely affect the refrigeration system and power consumption.
- 3. Do not block the air inlet and exhaust. It may lessen cooling performance or worse vet, cause the compressor to overheat.
- 4. Ensure cooling vest is connected properly to the chiller before starting the pump. Otherwise, leakage will occur.
- 5. Use anti-freeze liquid if temperature setting lower than 1°C(33°F).
- 6. Do not operate the MRCS close to a heat source or in ambient temperatures greater than 45°C (113°F).
- 7. Do not operate the MRCS in wet or submerged conditions.
- 8. Stop operation if high vibration or abnormal noise is observed.
- 9. Always use protective eyewear when cleaning the MRCU with compressed air.



Troubleshooting

Problem Description	Possible Cause	Solution
	Drained battery	Check battery status by following instructions under section for System Preparation, #1.
No power	Bad connection	Check that the connection between the power cord and chiller is secure and tight. Replace power cord if it is damaged.
	Compressor not working	With power on, touch the compressor. If vibration can be felt, compressor is working. If no vibration is felt, compressor is faulty and requires replacement. Contact your dealer for further instructions.
Low cooling capacity	Low refrigerant level	Check if air from exhaust is hot. Air should be hot for normal operation. Recharge refrigerant R134a if needed.
	Low coolant water level	Check liquid level inside reservoir. Replenish if low.
	Blockage at chiller inlet	Ensure there are no obstructions at inlet to chiller.
	Improper temperature setting	Check that the temperature setting on the control pad is with the range for comfortable body cooling.
Evaporator Freeze	No coolant circulation when system is ON.	Turn system off and wait for the coolant to melt.
	Pump is Off	Turn pump on.
	Problem with fitting connection between chiller and vest	Check that quick-connect fitting connection of flexible tubes are connected properly and not blocked, broken or kinked.
No liquid flow	Pump malfunction	Remove filler cap while Power and Pump are 'On'. Observe if water is flowing into reservoir. If no water flow is observed, pump is faulty and requires replacement. Contact your dealer for further instructions.
Cooling vest is wet	Condensation	The cooling vest is designed to be used as an undergarment to any other piece of clothing. When operating under conditions of high temperature and humidity, condensation will naturally occur and is not indicative of a defect or leak.
Faulty temperature sensor	No feedback; reference indicator on remote controller.	Check if sensor connection on the control board is loose or replace the sensor.

Safety



Warning: It is important to become thoroughly familiar with the operating characteristics of the COMPCOOLER Motorcycle Rider Chiller Cooling Unit. It is the owner's responsibility to assure proper User training of the cooling system including component knowledge, system preparation, system operation and maintenance. Disregarding this warning can result in injury to the operator and severe mechanical damage to the unit.

Warranty

Compcooler warrants this product to be free from defects in workmanship and materials, under normal residential use and conditions, for a period of one (1) year from the date of shipment. Shipping and handling fees are to be paid for by the customer. The manufacturer agrees, at its option during the warranty period, to repair any defect in material or workmanship or to furnish a repaired or refurbished product of equal value in exchange without charge (except for fees for shipping, handling, packing, return postage, and insurance which will be incurred by the customer). Such repair or replacement is subject to verification of the defect or malfunction and proof of purchase as confirmed by showing the model number on original dated sales receipt.

Certifications





Customer service: simonsun@compcooler.com

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Personal Thermal Regulation Technology
To Keep Your Body Cool and Comfortable in Harsh Conditions!

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