COMPCOOLER

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

Online Shopping

www.compcooler.shop

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Designed in USA
Made in China

Motorcycle Rider Chiller Cooling System (Vertical)

Model:COMP-MRCU-12200-V

Operation Manual

► *Anti-Freeze Liquid Only*

COMPCOOLER

PERSONAL THERMAL TECHNOLOGY

COMPCOOLER

Personal Thermal Technology

Personal Liquid Circulation Cooling System

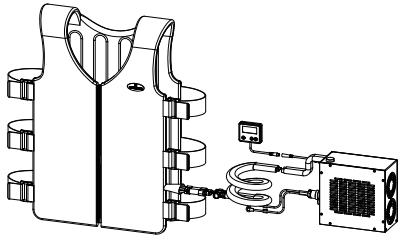
- Liquid Cooling Garment
- ICE Water Cooling Unit
- Mini Chiller Cooling Unit

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

Contents

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 hand-carry pack to cool the liquid. A pump in the chiller unit circulates the cold liquid into 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'.

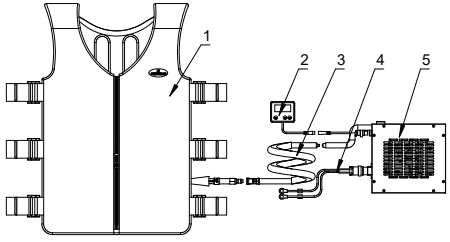
MRCS is powered by a 12-16V vehicle battery or rechargeable battery and delivers 150-200W of cooling capacity. Temperature control is -9°C to 30°C (16°F to 86°F) with an accuracy of +1/1°C (2°F). The system is programmable and will automatically operate at the user's preferred temperature set point. 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-LCG-MCV-OL/BK	Mesh Liquid Cooling Vest	1
3	COMP-ET-2M	Extension Tubing	1
4		Operation Manual	1

Components Description

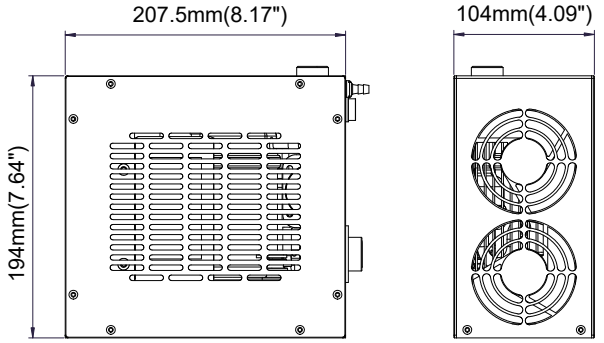
1. Mesh Liquid Cooling Vest
   Part no. COMP-LCG-MCV-OL/BK
2. Control Pad
3. Extension Tubing
4. Power Cord
5. Chiller Unit



Optional Components

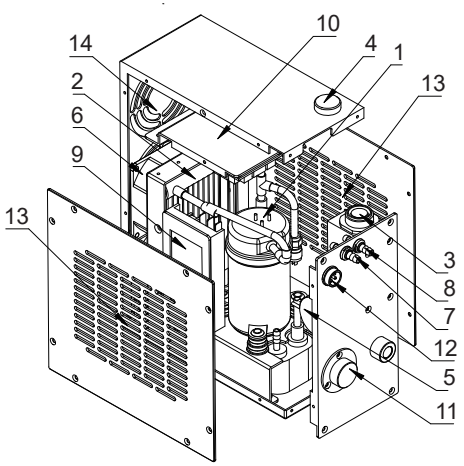
Item	Part number	Description
1	COMP-LCG-FBG-BK	Cooling Garment, Full body
2	COMP-LCG-VVDH	V-Neck Detachable Hoodie Vest
3	COMP-RB-1220	Rechargeable Battery

Dimensions, Chiller Unit



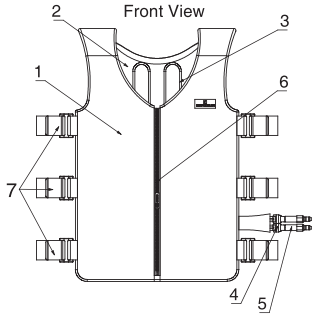
Chiller Unit Callouts

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



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

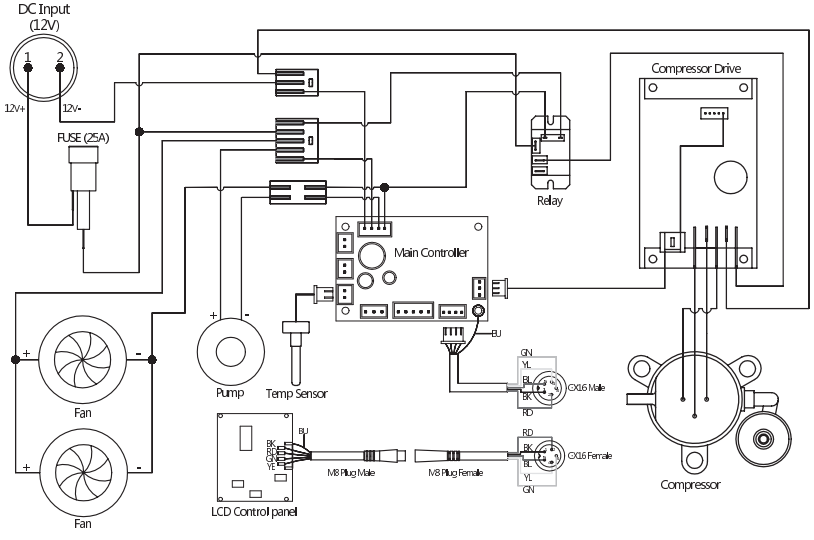


Liquid Cooling Vest Sizes

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

NO	SIZE	CM				INCH			
		XS/S	M/L	XL/2XL	3XL/4XL	XS/S	M/L	XL/2XL	3XL/4XL
1	Clothing Length	60	62	64	66	23.6"	24.4"	25.2"	26.0"
2	Chest	88-100	92-104	96-108	100-112	34.6"-39.4"	36.2"-40.9"	37.8"-42.5"	39.4"-44.1"
3	Shoulder width	39	41	43	45	15.4"	16.1"	16.9"	17.7"

Chiller Control Diagram



Chiller Unit Technical Datasheet

Cooling Capacity (Ambient Temp. 40°C)		W	200
Cooling Capacity (Ambient Temp. 104°F)		Btu	684
Max Cooling Capacity		W	250
Power Supply		V DC	12-16.8
Operation Current		A	9-15
Max Current		A	18
Max Power Consumption (Cooling)		W	216
Refrigerant	Type		R134a
Compressor Speed Setting	Manual	RPM	2000-6000
Temp Control (Cooling)		°C (°F)	-9 to 30 (16 to 86)
Coolant	Anti-freeze liquid		Yes
Circulation Tubing	ID	inch	1/4
Miniature Rotary Compressor	Qty	PC	1
	Voltage	V DC	12
	Discharge	CC	1.4
	Weight	G (Lbs.)	1100 (2.4)
Fan	Qty	PC	2
	Voltage	V DC	12
	Air Flow	CFM	60
Pump	Voltage	V DC	12
	Water flow	L/Min	1.5
	Lift	M	3
Power Connector	2 pins		yes
Controller Connector	5 pins		yes
Operation Ambient	Max	°C (°F)	-10 to 45 (14 to 113)
Storage Temp		°C (°F)	-20 to 70 (-4 to 158)
Noise	Max	dBA	50
Color	Black and silver		yes
Dimension	L x W x H	MM	207.5x104x194
		INCH	8.17x4.09x7.64
Weight		KGS	4.1
		LBS	9

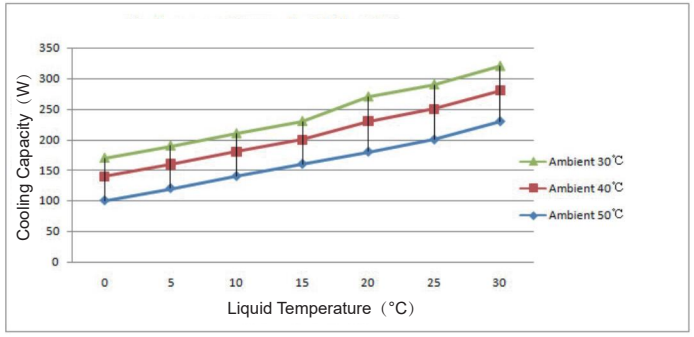
Li-Ion Rechargeable Battery 240WH

- Part no. COMP-RB-1220
- Rechargeable Battery: Li-Ion
- Voltage: 12-16.8V DC
- Capacity: 240WH
- Max Output: 20A
- Charging: 110/220V AC
- Charging time: 4-5 hours
- Battery Status: 3 lights show remaining capacity
- Battery Case: Aluminum
- Color: Black
- Weight: 1.5 Kg (3.3 lbs)
- Size: 158x86×69.5mm (6.2 x 3.4 x 2.7 inch)
- Operation Time: 1 - 2 hours for the chiller unit

Optional Power Adapter

Part no.COMP-PA-11012
Power: 280W
DC Connector: SAE
AC Connector: US Style (EU, AU, JP)

Performance Curves for MRCU

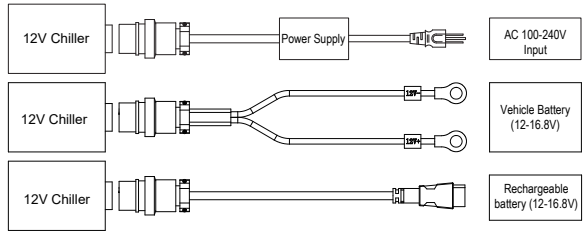


System Preparation

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 SAE cord supplied in the package. Route and secure the wire assembly in a manner that prevents damage from heat or snagging.
Connect the SAE plug of the wire assembly to the mating SAE plug of the chiller unit. The SAE power connector has a quick breakaway feature that is easily assembled or disassembled.

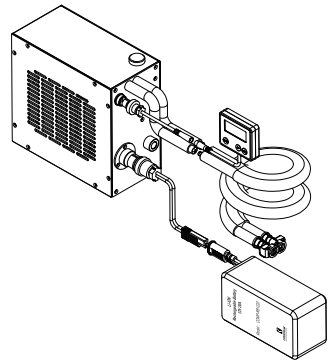


2. Powered by Battery (Optional):

Charge the battery using the included charger. LED lights on the battery charger 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 indicates ≤50% capacity.

The typical charge time to full is 4 hours. A fully charged battery (COMP-RB-1220) will operate up to 2 hours.



3. Powered by Adapter (Optional). Connect the SAE plug of 110-220V AC to 12V DC power adapter (part no. COMP-PA-11012-SAE-US) to the mating SAE plug of chiller unit.

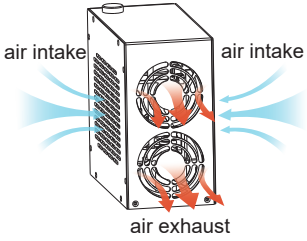
4. Connect the cooling vest. Connect the flexible pair of tubes from the chiller to the cooling vest. The tubes have quick-release fittings on both ends. Simply press the button on the fitting to release it. Conversely, when connecting the fitting, an audible 'click' ensures a good connection.

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 is 1/4" diameter, any User-supplied barbed fittings must be sized accordingly.

5. 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 sides air intake (it works fine if one side be blocked) and exhaust on the back 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.



6. 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 type of liquid must be **anti-freeze liquid**, 20-50% glycol and clean water. The heat exchanger may be frozen in less than 1 minutes if use water only. Freezing of heat exchanger may result in no circulation and no cooling performance!

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

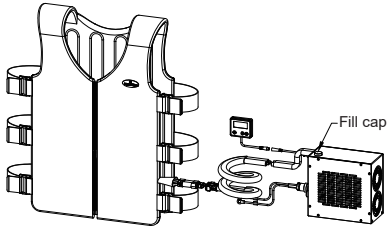
Priming Steps:

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.
c. Press the "ON/OFF" 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 the cooling vest.
d. 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.
b. Replace the reservoir cap.



7. Pre-Testing:

With the unit attached to power, turn the power switch on. Using the control pad, press "ON/OFF" to start refrigeration and liquid 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.

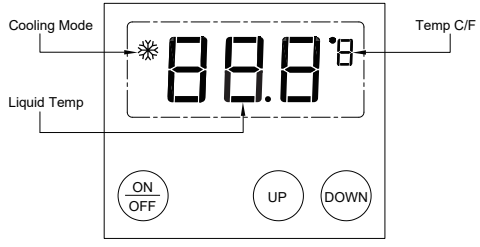
2. **Connect the cooling vest to the chiller;** connect the tubes on the vest to the tubes on the backpack using the quick-connect fittings. An audible 'click' of the quick-connect fittings ensures a proper connection.

3.**Start Pump;** Press the 'Pump' button on the control pad to start or stop circulation. Ensure the quick 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.

4. **Start the 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 the chiller system is 'On'. Otherwise, the evaporator may freeze in less than 1 minute. Freezing of the 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. User may press “UP” and “DOWN” simultaneously to convert Fahrenheit to Celsius.



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.

6.**Control pad**: Users 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. User may use Pneumatic drain device to empty the liquid of vest.

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 hand-carry 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 anti-freeze, 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 the next use.

2.Charging Refrigerant; (not recommend for uncertified operator)

If the cooling capacity has been decreased due to a 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 to provide extended cooling times.
- **Chiller Unit;** if damaged, the 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. Ensure power source is 12-16.8V DC before connecting chiller to vehicle power.
2. Ensure vehicle power is 200W or 20A before operation.
3. Repetitively cycling the chiller within a short period of time using the 'System On/Off' button will adversely affect the refrigeration system and power consumption.
4. Do not block the air inlet and outlet. It may lessen cooling performance or worse yet, cause the compressor to overheat.
5. Ensure cooling garments or cooling pads are connected to the chiller before starting the pump. Otherwise, leakage will occur.
6. Use anti-freeze liquid to avoid freezing of plate heat exchanger (reference System Preparation section, instruction #6.)
7. Do not operate the chiller close to a heat source or in ambient temperatures greater than 50°C(122°F).
8. Do not operate the chiller in wet or submerged conditions.
9. Stop operation and disconnect the power if high vibration or abnormal noise is observed.
10. Always use protective eyewear when cleaning the chiller with compressed air.

Troubleshooting

Problem Description	Possible Cause	Solution
No power	Drained battery	Reference "E1" fault code on remote controller. Reverse the + and - polarity to fix the issue.
	Bad connection	Check the connection between power cord and chiller is secure and tight. Replace the power cord if it is damaged.
	Low voltage	Chiller operation voltage range 12-16.8V DC, compressor will not start if less than 12V DC.
No Cooling	Heat Exchanger frozen	Chiller must use anti-freeze liquid to avoid the freeze of heat exchanger.
	No liquid circulation	Check if pump is turned on and cooling garment is connected, and no kinks or blockage exist.
	No refrigeration	Compressor locked, over heat pretection, if ambient is higher than 55°C.
Low cooling capacity	Low heat exchange rate	Check the blockage of air intake and exhaust.
	Low refrigeration level	Check the hot air from exhaust, recharge refrigerant R134a if need.
	Low voltage	Chiller voltage should be 12-16.8V, low voltage may result in lower speed of compressor.
	Contamination of condenser	The condenser should be kept free of dust and dirt.
No circulation	Pump blocked	Disassemble the pump from chiller unit, clean or replace if blocked.
	Tubing blocked	Replace the tubing if impurity substance blocked the circulation.
	Garment not connected	Connect the tubing-lined garment for close loop circulation.

Troubleshooting

Problem Description	Possible Cause	Solution
Control pad not working	Loose connection	Reference "E1" fault code on remote controller. Reverse the + and - polarity to fix the issue.
	LED sporadic or unclear	Check the connection between power cord and chiller is secure and tight. Replace the power cord if it is damaged.
Temperature sensor	No feedback, reference "P1" on remote controller	Check if sensor connection on the control board is loose or replace the sensor.
Condensation of garment	Cooling vest is wet but no leaking	When operation under the conditions of high temperature and high humidity, condensation will naturally occur and it is not indicative of defect.

Fault Codes on Remote Controller

Item	Code	Description
1	E1	Wrong Polarity or reverse connection from the power input
2	P1	No temp signal from sensor
3	EF	Communication signal is lost, restart the chiller to fix the issue.

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 ensure 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 the original dated sales receipt.

Certifications

Certifications

CE, UL, FDA, FCC, RoHS, PSE

Quality System

AS 9100
BUREAU VERITAS
Certification

ISO9001