

Personal Cooling System

Setup and Operation

RINI Service Items



Personal Cooling Unit (PCU)



Mounting Bracket



Cooling Shirt
X-SM, SM, MD, LG, X-LG
(103506 – 103510)



Power Cable



Water Fill Bottle & Golden Solution

Installation

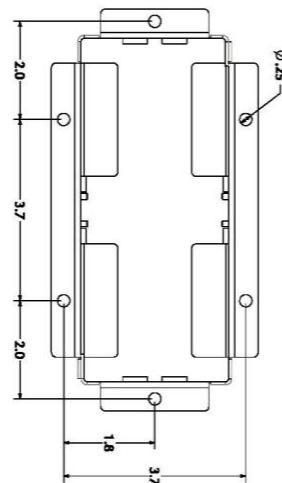
- Secure bracket to vehicle with screws in 1/4" hole Locations
- Install PCU level with Fan side Up in Tray
- PCU is Fastened to Bracket with Hooks on Side and Latches
- Provide airflow to Inlet
- Do Not Block Air Inlet/ Air Exhaust



Air Inlet



Air Exhaust



- PCU and Cooling Shirt MUST be primed with water prior to use.
- Add water to the Water Fill Bottle line and add ~ 2mL of golden solution to jar.
- Connect Shirt to latch side of fill bottle and unit to button side.
- Connect Power Cable to PCU and supply 14 VDC.
- Turn PCU knob to Level I or II and run for approximately 2 minutes or until no air bubbles are visible in return branch in the Water Fill Bottle.
- If no flow is visible push priming bulb on Water Fill Bottle several times to prime pump.
- Turn system knob to the OFF position
- Disconnect Water Fill Bottle (This should NOT be connected during operation).
- Cooling System is ready for operation.
- If multiple Cooling Shirts are used with one Cooling System repeat the entire process for each Cooling Shirt.

- Wear the Cooling Shirt next to skin Under Fire Suit.
- Connect the Cooling Shirt connector to the PCU connector. (Water Fill Bottle should NOT be connected during operation).
- Turn the Control Knob to the desired Cooling Setting.
- Cold water should be felt in the shirt within a few minutes. If it does not feel cold reference the troubleshooting guide.

| ITEM DESCRIPTION | ITEM NUMBER | PRICE (2022) | PHOTO OF ITEM |
|----------------------------------------|------------------|--------------|---------------|
| FloLok, Push Button FloLok, Latch | 100727 100924 | \$150 | |
| Mounting Tray | 101800 | \$160 | |
| Golden Solution, 2 oz | 102174 | \$10 | |
| Power Cables, M8- SAE | 103065 | \$95 | |
| Service Kit: Flolok O-ring Replacement | 102473 | \$45 | |
| Fill Bottle Replacement Filter | 103141 | \$25 | |
| Water Filter Parts | 102475 | \$18 | |
| Water Filter Replacement Kit | 102476 | \$65 | |
| Umbilical (4 ft – FloLok) | 102534 | \$390 | |
| Umbilical (2ft – FloLok) | 102739 | \$390 | |
| Umbilical Assembly Helmet Y-Branch | 102638 | \$390 | |
| Garment Purge Assembly | 102922 | \$470 | |
| Cooling Shirt | 103507 to 103510 | \$590 | |
| Cooling Vest | 103456-103510 | | |
| SM, MD, LG, X-LG XSM Custom order | | | |
| Carbon Fiber Duct | 103504 | \$250 | |
| Umbilical Check Valve Service Kit | 103774 | \$51 | |

| MAINTENANCE TASK | RECOMMENDED FREQUENCY |
|-------------------------------------|-----------------------------------------------------------|
| Purge Water from PCU and Garment | Every 2 Weeks or prior to Storage |
| PCU Water Change | Bi-weekly |
| PCU Umbilical Water Filter Cleaning | Quarterly or if Unit has issue with Water Flow or Cooling |
| Clean Fill Bottle Red Filter | Semi-Annually or as needed |
| Flolok O-Ring Replacement | When Damaged or Missing |
| PCU Umbilical Replacement | When Damaged |
| Garment Cleaning | As Needed in Mesh Bag in Laundry Machine (Air Dry) |

Purge Water from PCU and Garment

- Connect PCU to Fill Bottle and Shirt to Water Fill Bottle
- Invert Fill Bottle and Turn PCU ON
- Run PCU for 2 minutes or until liquid stops returning to fill branch in inverted Fill Bottle
- Must repeat step for each Cooling Shirt used with system.

PCU Umbilical Filter Cleaning

- Unscrew Clamp on Flolok Latch Connector on PCU
- Push Braided sleeving and Remove insulation cover
- Push pins out with tool to remove filter housing lid. Do NOT remove hose clamps.
- Remove filter screen basket inspect for holes and clean
- Insert filter back in housing, verify O-ring is installed and re-install lid and re-insert pins.
- Return insulation & braid over housing re-assemble Flolok



| ISSUE | POSSIBLE CAUSE | SOLUTION |
|-------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System does not start | Electrical interfaces not mated | a) Check connection at PCU and at terminating end of power leads b) Clean electrical connections and reconnect |
| | Damage to Power Cable | Replace Power Cable. |
| | PCS Control Switch or Pendant Switch is OFF. | Turn knob or pendant switch to the desired setting. |
| System turns on briefly and then shuts down | No water flow | a) Verify water connections between PCU and garment are mated b) Verify that PCU and garment were filled with water c) Clean water filter screen in PCU umbilical to ensure not clogged. |
| | Unit not operated in correct orientation | When installed in Mounting Tray fan should be oriented UP. |
| | Electrical High Voltage Safety is tripped | a) Verify that nominal 12 VDC voltage was supplied to system. b) Cycle switch or pendant switch to OFF position c) Disconnect from primary power source |
| | Electrical Low Voltage safety is tripped | a) Verify that nominal 12 VDC voltage was supplied to system. b) Cycle switch or pendant switch to OFF position c) Disconnect from primary power source |
| System turns on but does not provide adequate cooling | System not adequately primed with water | a) Fill PCU and Shirt with water using Fill Procedure. If no flow is visible depress priming bulb on Fill Bottle a 20 times or until flow is observed in Fill Bottle return branch. b) Check that water fill bottle internal tubes are connected and not detached. |
| | Low Water Flow | a) Check water connections are mated including shirt b) Clean water filter screen in PCU Umbilical c) Clean and purge Shirt / Vest. |
| | Low Airflow | a) Verify fan is obstructed and spinning freely. b) Ensure ducted air flow supply to inlet c) Make sure Exhaust outlet isn't blocked. |

Contact RINI's Service Department if additional assistance is required. (407) 359-7138



- Driver Personal Cooling
- Cooling Shirt with Tubing Worn Under Fire Suit
- Runs Continuously
- Mitigates Heat Stress
- Enhances Driving Effectiveness



Operation & Maintenance Video

<https://vimeo.com/200669956>

SPECIFICATIONS

- Weight:** 4 lbs.
- Size:** 6.5" L x 5.0" H x 2.85" W
- Nominal Voltage:** 14 VDC
- Operating Voltage:** 12 to 16 VDC
- Low Voltage Cutoff:** 12 VDC
- Power Draw:** 6 Amp
- Cooling Levels:** 5 Different Settings
- Chilled Water Temperature:** 72°F Nominal (55°F to 72°F)
- Max Operating Air Temperature:** 140°F