COOL-SPACE™
EVAPORATIVE COOLING

Operation and Maintenance Manual for:

CS5-16, CS6-36, CS5-48

220V/60HZ

GLACIER **AVALANCHE** **BLIZZARD**

⚠WARNING

IMPORTANT SAFETY INFORMATION INSIDE

Serious Injury or death possible.

Read, understand, and follow all safety information and instructions in the manual before using or servicing this product.

CE

Operation & Maintenance Manual

Table of Contents:

Due to continuous product innovations, we reserve the right to change product specification without due notice.

Signal Word Definitions	
⚠DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.
⚠WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.
⚠CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.
IMPORTANT	IMPORTANT indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage.

1.0 Introduction

COOL-**SPACE**® is a patented and registered Trade Mark of Advanced Radiant Systems, Inc. and manufactured in Indiana USA.

COOL-**SPACE**® is a compact, self-contained, high-efficiency portable evaporative cooler capable of lowering existing temperatures by as much as 15ºC.

2.0 Unpacking your COOL-SPACE® unit

IMPORTANT
Carefully examine the carton for damage before opening. If the carton is damaged notify the shipping company immediately.

The CS5-16 units are shipped in a cardboard box. Open the top panel and lift the unit out. The larger units are shipped on a wooden skid with a cardboard cover and lid. The cardboard cover simply lifts off the COOL-**SPACE**® unit. The cooler must be lifted off the wooden skid.

3.0 Set-up of the COOL-SPACE® unit

The COOL-**SPACE**® unit is factory tested and ready to use. The unit should be placed on a level surface, and the castors locked to prevent inadvertent movement. Follow instructions below to connect water and electrical supply.

3.1 Connecting the water supply

⚠CAUTION
Do not connect the COOL-**SPACE**® unit to any water source where water pressure exceeds 8 bar. This will cause permanent damage to the unit.

The COOL-**SPACE**® unit comes equipped with a female garden hose water source connection, with a pressure regulator attached. Attach the unit to a standard garden hose outlet for a water source. The unit should not be attached to any water source with operating pressure above 8 bar. Pressures above 8 bar must use a pressure regulator which may be purchased at your local hardware store. Note: a female - ¾: to 22mm connection may be required (not supplied) depending on local pipe sizing. If you have **purchased the optional portable water tank, use a standard garden hose (not provided)** to connect the tank to the cooler.

3.2 Connecting the electrical supply

IMPORTANT

The COOL-**SPACE**® unit should be plugged into a fused or circuit breaker protected 10 amp, 220 volt, and 60 Hz circuit. If the unit is custom built for a specific application, please consult the factory for proper configuration.

All models utilize standard 220-volt power supply. The unit should be plugged into a fused or circuit breaker protected 10 amp, 220 volt, 60 HZ circuit. If the unit is custom built for a specific application, please consult the factory for proper configuration. A ground fault circuit interrupter protected circuit is strongly recommended.

Table 1 shows the amperage requirements for the specific models. If an extension cord is required, refer to Table 2 for the proper 3-conducter heavy-duty cord required.

⚠CAUTION

Do not exceed the amperage ratings of the extension cord. Undersized extension cords result in excessive drops in voltage, which cause the electric motors to generate excessive heat. This condition results in inefficient motor operation and premature motor failure, WHICH WILL VOID THE WARRANTY.

Table 1. Electrical requirements for EU and Rest of the World operation

CS Model Number	Volts ± 10%	Frequency (Hz)	Running Amps
16VD	220	60	2.40
36VD	220	60	4.30
482B	220	60	6.45

Table 2. Cord size requirement based on length and max amp draw

Length In Metres	Cord Size			
	16 Ga	14 Ga	12 Ga	10 Ga
6	13 A	15 A	15 A	15 A
16	13 A	14 A	15 A	15 A
32	10 A	12 A	13 A	15 A

A: Amps at 220 volt (de-rate for lower voltage)
Note: Ga relates to American Wire Gauge.
Gauge to mm:
10 = 2.6mm, 12 = 2.0mm, 14 = 1.6, 16 = 1.2mm
Based on AWG sizes

4.0 Operating procedures

There are 3 factors to consider when determining where to place the COOL-**SPACE®** unit.

1. ***Fresh air supply:*** The inlet side of the unit (pad side) requires a constant, uninterrupted supply of fresh air for maximum performance. A distance of 1 metre clear space to any obstructions at the rear or inlet side of the unit is recommended.

2. ***Discharge air flow:*** The cool air discharged from the unit should be free of obstruction to allow the air to circulate in order to maximize the cooling zone.

3. ***Ventilation:*** In order to operate at maximum effectiveness, it is helpful to have provisions to remove the air discharged from the COOL-**SPACE®** unit from the cooling area. This ensures that the COOL-**SPACE®** unit does not recirculate air that has already been through the evaporative cooling process.

The COOL-**SPACE®** unit must be placed on a level surface to operate correctly. The units create an oval shaped air pattern that can reach out as far as 21+ metres with larger fans. Obstacles such as racks and workbenches may interfere with the air flow. An attempt should be made to locate the unit in such a manner that interruption of the air pattern is held to a minimum. Multiple units may be required to cover larger areas.

When the COOL-**SPACE®** unit is placed near a wall or other vertical obstruction, it is recommended that there be a space of at least 1 metre between the back (pad side) of the unit and the obstruction. This ensures that a clear supply of fresh air is able to get to the inlet of the unit.

Operational weights:

CS16 Unit: 38 kg. (unit) + 10 kg. (pad operating weight) + 54 kg. (56 L. reservoir) = 103 kg.CS16 TB Unit: 52 kg. (unit) + 10 kg. (pad operating weight) + 189 kg. (200 L. reservoir) = 251 kg. CS36 Unit: 133 kg. (unit) + 27 kg. (pad operating weight) + 174 kg. (180 L. reservoir) = 335 kg. CS48 Unit: 225 kg. (unit) + 45kg. (pad operating weight) + 232 kg. (240 L. reservoir) = 503 kg.

4.1 Filling the unit with water

Once the COOL-**SPACE®** unit has been connected to a water source as described in 3.1, turn the water supply valve on and the unit will fill with water. The float valve will shut off the water flow when the sump is full.

4.2 Starting the fan

Turn the fan switch to *HIGH* speed on start-up, allow motor to reach maximum speed, and then adjust to your preferred setting.

4.3 Starting the pump and adjusting the water flow

IMPORTANT

DO NOT flood the pads with water, keep them moist. New pads will take a few days before they become completely saturated. It is normal to have several dry streaks on the face of the pads about 25 to 50 mm wide. If the streaks are larger adjust the flow control knob to allow more water to flow onto the pads. NOTE: New pads may also emanate an odour under initial operating conditions from the resin used to construct the media. Flush the pads by running the pump without the fan running for approximately at least 12 hours; overnight is best. Empty the sump and refill. Repeat if odour still exists.

NOTE: Run fan while adjusting the water flow

Once the sump is full, the pump switch may be turned to the 'ON' position. The flow control knob will need to be adjusted on initial start-up. It is located at the side of the unit; it controls the volume of water that is delivered to the top of the cooling pads.

⚠CAUTION

Prolonged use of hard water without proper water treatment will create mineral deposit build up causing the pump to fail which is NOT COVERED BY WARRANTY

IMPORTANT

Pump is equipped with a **LOW WATER CUT OFF** which may take up to 5 minutes to reset each time the power is turned on.

5.0 Maintenance and storage

⚠WARNING

ELECTRICAL SHOCK HAZARD

Disconnect the power supply before performing any service or maintenance on the unit. Failure to do so may result in serious injury or death.

5.1 Removing the cooling media to access the inside of the unit

In order to perform any maintenance on internal components, the cooling pads must be removed to access the inside of the unit.

1. Remove the (2) bolts connecting the pad retainer bar (pad-side) from the housing.
2. Tilt pads from the top, starting with the center pad, out of the unit.
   Note: Reinstall pads correctly according to the markings on the pads.

5.2 Daily maintenance

IMPORTANT

When shutting down the COOL-**SPACE**® unit at the end of each workday, the pump should be turned off approximately 15 minutes before the fan is turned off. This will allow the pads to drain and dry out. This simple guideline will ensure long and efficient pad life as well as help to control mildew and bacteria growth.

5.3 Periodic maintenance

⚠WARNING

ELECTRICAL SHOCK HAZARD

Disconnect the power supply before performing any service or maintenance on the unit. Failure to do so may result in serious injury or death.

Depending on how often the COOL-**SPACE®** unit operates, this procedure should be performed anywhere from every week for heavy use to monthly for light use. Shut down the unit and drain the water sump. The cooling pads act as a filtering agent and remove dust and other particles from the incoming air stream. These particles will flow into the sump and collect there. Also, impurities in the water will collect in the sump.

Draining the Water Sump

1. Close the water flow valve and open the drain valve.
2. Run pump until sump is dry then immediately shut off pump.
3. Turn unit off and disconnect the power supply.
4. Remove cooling pads, refer to section 5.1.
5. Clean out reservoir with either a towel or wet/dry vacuum.
6. Check belt for tightness, if applicable.
7. Remove the water spray bar and its plug. Insure holes are free of debris.
8. Reinstall pads and pad retainer.
9. Reinstall rear guard (if applicable).

To keep the COOL-**SPACE®** unit operating at peak efficiency, ensure that the cooling pads are kept clean and dust-free. Dust and other particles have an adverse effect on the media's ability to introduce water into the air stream. If the pad surface becomes dirty or dusty, clean with a soft brush and water.

The fan motor may require periodic lubrication depending on the COOL-**SPACE®** model. Check your model for an oil fill location on the motor. A few drops of light oil each year will extend motor life.

5.4 Storage

1. Remove the pads, as described in section 5.1
2. Clean with a soft brush and water to remove dust and debris
3. Drain sump using procedure described in section 5.3 and wipe dry
4. Store the COOL-**SPACE®** unit in a dry area and cover if possible to prevent dust build-up. Covers for your unit can be found online at www.cool-space.com

6.0 Troubleshooting/Repair

6.1 Troubleshooting

⚠WARNING
ELECTRICAL SHOCK HAZARD
Disconnect the power supply before performing any service or maintenance on the unit. Failure to do so may result in serious injury or death.

The COOL-**SPACE**® unit consists of three systems: the fan, water distribution and pump. It is important to determine which system of the COOL-**SPACE**® unit the problem is associated with. This may not always be obvious, in that certain problems may be associated with more than one system.

When determining which system has a problem, you must define the associated problem, (e.g. the pump is not running). Although this might seem a bit simplified, several things may cause this particular problem. So while defining the problem, a careful check of all systems should be made to fully understand the extent of the problem.

If you have a complete understanding of all of the systems of the COOL-**SPACE**® unit and how they depend on each other, it will be simple to define and solve any problem.

Necessary Tools:

Although the COOL-**SPACE**® unit is designed to be simple to maintain, it will be necessary to have some basic hand tools (screwdrivers, pliers, adjustable wrenches, etc.) as well as a volt/ohm metre when troubleshooting the electrical system.

6.1 Troubleshooting (continued)

Fan System

⚠CAUTION
Please use caution when troubleshooting or repairing all electrical components. Be certain that all power is disconnected from the COOL-**SPACE**® unit before the cooling pads or fan guard are removed to gain access to the fan.

Direct & Belt Drive Models

Problem	Check	Solution
Fan won't run and makes no sound.	Power cord, extension cord, switches, circuit breaker, GFI ground fault.	Reconnect power or extension cord. Reset breaker.
Fan motor won't run and makes a humming sound.	Blade in contact with shroud. Motor stalled (will not turn by hand).	Re-center blade hub. Replace motor.
Breaker trips or fuse blows when fan is started.	Motor stall. Check power source for min. 220v/10 amp. Extension cord.	Replace motor. Upgrade power supply. Replace with heavier cord.
Motor overheating and shutting off. Restarting several minutes later.	Extension cord gauge too small Inlet air obstructed or too close to wall Faulty motor Loose belt	Replace with heavier cord Provide minimum 1 metre inlet clearance. Replace motor. Tighten belt
Fan motor won't run and switch makes soft clicking sound.	Switch making good contact.	Replace switch.
Fan blade doesn't turn and unit makes squealing sound.	Motor stall (as above). Fan belt loose or broken. Fan pulley spinning on shaft.	Replace motor. Tighten or replace fan belt. Tighten pulley set screw.
Fan belts do not last very long.	Motor and fan pulleys alignment.	Realign motor and fan pulleys.
Fan will not reach speed but turns and makes humming sound.	Capacitor (where visible) and motor electrical connections. Extension cord to small.	Replace capacitor or motor. Increase cord gauge.

6.1 Troubleshooting (continued)

Water System

The water distribution system consists of two (2) assemblies:

- The Water Inlet Assembly
  - Brass bulkhead fitting
  - Float valve connection hose
  - Float valve assembly
- The Hose and Valve Assembly
  - Spray Bar Assembly
  - Valve Assembly
  - Connection Hose

Problem	Check	Solution
Floor at side of COOL-**SPACE®** unit is wet	Water inlet hose is loose at supply hose or inlet hose is loose at bulkhead fitting.	Tighten connections and/or replace hose washers.
COOL-**SPACE®** unit overflows from reservoir or is spitting water through fan.	Float valve hose is loose at bulkhead fitting or at float valve. Water pressure is too high to allow float valve to shutoff (8 bar max). Float valve is not seating properly.	Tighten connections and/or replace hose washers. Reduce water pressure by adding an inline reducer. Check float valve. Replace float orifice. Check all hoses for leaks.
Water spitting from the unit.	Flow control Cracked Hose & Valve Assembly. Hose connection loose	Reduce flow Replace Hose & Valve Assembly. Tighten hose.
Water leaking from drain plug.	For worn washer, worn stem. Make sure drain valve is closed	Replace washer. Replace drain plug.
Water leaking from water flow control valve.	Washer worn. Stem worn. Jam nut or lock nut loose.	Replace water flow control valve. Tighten Jam nut.
Too many dry streaks in the pads.	Holes in spray bar blocked. Adjust water flow.	Remove spray bar. Remove plug and clean tube and holes. Open water flow control valve.

6.1 Troubleshooting (continued)

Pump

Problem	Check	Solution
Pump motor will not run when switch is turned on.	Turn fan on to check for power. Is water level high enough to make the low- water cut-off circuit?	If fan doesn't start; check breaker and cord plug-in. If fan does start; check for power to and through pump switch (when turned on). Fill water reservoir.
Pump motor hums when switch is turned on, but does not pump water.	Obstruction in impellor. Pump motor failure.	Remove object(s). Replace pump.
Pump makes loud noise while running.	Object(s) in impellor, impellor loose. Pump bearings bad.	Remove object(s). Replace pump.
Breaker trips or fuse blows when switch is turned on.	Check power cord length and breaker rating. Check for locked-up pump.	Refer to page 2 for unit amperage draw and to determine required cord gauge. Replace pump.
Pump won't run and power is available. Pump is functional.	Make certain switch is working. Is water level high enough to make the low- water cut-off circuit?	Replace switch if not completing circuit. Fill water reservoir enough to activate Low Water Shut-off switch.
Pump runs but does not pump water.	Air lock in outlet side of pump. Make certain the impellor is turning in pump.	Turn off and on to bleed. If not, replace pump.

6.2 Repair procedures

⚠CAUTION
Repairs should be performed by a qualified technician!

Fan Motor Replacement

⚠WARNING
ELECTRICAL SHOCK HAZARD
Disconnect the power supply before performing any service or maintenance on the unit. Failure to do so may result in serious injury or death.

GLACIER (CS5-16) Series Direct Drive Models

1. Remove the black motor wiring plate and disconnect motor wires. (Mark each wire with a marker or marker tape to allow for easy matching when installing new motor.
2. Remove the (4) nuts and bolts that mount the motor, fan and support braces (complete fan assembly).
3. Replace new fan assembly.
4. Secure with 4 nuts and bolts.
5. Replace any wire ties that were removed when taking out the old fan assembly.
6. Replace the black motor wiring plate.

AVALANCHE (CS6-36) Series Variable Speed Direct Drive Models

1. Remove cap off rear of motor. Disconnect wires. Clip wire ties.
2. Remove 4 fan mounting bolts from the front. (Support fan to ensure it doesn't fall.)
3. Pull the fan out of the unit.
4. Remove the cap on blade to access blade mounting nut.
5. Remove blade mounting nut and blade.
6. Remove mounting arms by loosening 8 nuts and slide arms out of slot. (Make note of arms position for reinstallation.)
7. Install arms and blade on new motor.
8. Install fan in opening and secure with mounting bolts.
9. Reconnect wires and tie cord to motor arm to keep them out of fan.

6.2 Repair procedures (continued)

BLIZZARD (CS5-48) Belt Drive Models

1. Remove the motor wiring plate and disconnect motor wires. Mark each wire with a marker that will allow easy matching when new motor is installed. (see section 5.1 for pad removal instructions)
2. Loosen the four bolts that fasten the motor to the bracket. This will allow the removal of the motor.
3. Remove the motor pulley by loosening the set screw and slide the pulley off.
4. Install the pulley onto the new motor and slightly tighten the set screw.
5. Place new motor onto the mounting bracket and reinstall the four mounting bolts and tighten.
6. Visually align the motor pulley and fan pulley by using the belt as a reference. Adjust the motor pulley in or out to align. Tighten the motor pulley.
7. Loosen the four (4) bolts that secure the mounting bracket to the upright.
8. Lower the bracket slightly until the belt is tight (but not tight enough to overload the motor), then tighten the four bracket bolts.
9. Replace the motor wires as marked from step #5. Replace wire ties to prevent cord from getting in fan blade.
10. Replace motor wiring cover plate and inspect to be certain that the rubber seal is properly seated.
11. Replace cooling pads and guards and reconnect power and test motor.

Pump Replacement (All Models)

1. Disconnect hose from pump.
2. Remove pump bracket.
3. Remove the 2 screws from the top of the electrical cord and unplug the cord by pulling straight up from the top of the pump.
4. Remove pump from water sump and install new pump. Reverse the above procedures to reconnect the wiring, pump bracket and the hose. Secure wires to fan frame with wire ties to clear the fan blades.
5. Reinstall cooling pads and guards, reconnect power and test pump.

6.3 Technical support

Technical support and service is available directly from your distributor or

COOL-**SPACE**® Technical Support Hot Line at 001-317-577-0337
Visit: www.cool-space.com
Email: sales@cool-space.com

7.0 Warranty

Under normal use, the warranty covers the unit and its components for twenty-four (24) months from date of invoice. Refer to the manufacturer's Warranty Policy for details.

7.1 Warranty Form

You must register your COOL-**SPACE**® Portable Evaporative Cooler within fifteen (15) days of initial purchase to validate your cooler's warranty. You may fill out the warranty form supplied with your unity and fax it to 001-317-485-0118 or register online at www.cool-space.com.

7.2 Warranty parts

Warranty replacement parts are available through your local distributor or supplier where you purchased your COOL-**SPACE**® unit. If you have any questions or concerns, please contact us direct at 001-317-577-0337 or at sales@cool-space.com. Please have your **model number** and **serial number** ready.

DO NOT DISCARD FAULTY PARTS

Check with the Manufacturer as they may need to be returned for warranty credit.

7.3 Optional Accessories and Replacement Parts

Accessories and replacement parts are available from your local distributor or supplier. To order parts or for help finding a distributor or supplier visit the COOL-**SPACE**® website at www.cool-space.com or call 001-317-577-0337 or email sales@cool-space.com.

Common GLACIER, AVALANCHE, and BLIZZARD Replacement Parts

Fan Motor	
CS-F16-VD 220/60HZ	45cm (18") Fan Assembly with Motor for GLACIER
CS-M36V-220	90cm (36") Variable Speed 60HZ for AVALANCHE
CS-M48-2B-60/220	120cm (48") Two Speed 60 HZ for BLIZZARD

Switches	
CS-E110	On/Off Pump & Single Speed Fan
CS-E111	Two Speed
CS-E180	Variable Speed CS6-36-VD 60HZ for AVALANCHE
CS-E199-VD	220/230 VD Controller for GLACIER

Pump	
CS-E173-1	CS5-16-VD, CS6-36-VD, CS5-48-2B

20cm (8") Pads	
CS-H610	CS5-16-VD (2 required) for GLACIER
CS-H613	CS6-36-VD (5 required) for AVALANCHE
CS-H48-140	CS5-48-2B (6 required) for BLIZZARD

Float Assembly	
CS-P131 (After 01/11)	Fits All Black Box Float

For exploded view drawings please go to

www.cool-**space**.com

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DISTRIBUTOR:

Disposal:
This symbol on the product indicates that the appliance cannot be
collection point for electric and electronic appliances.