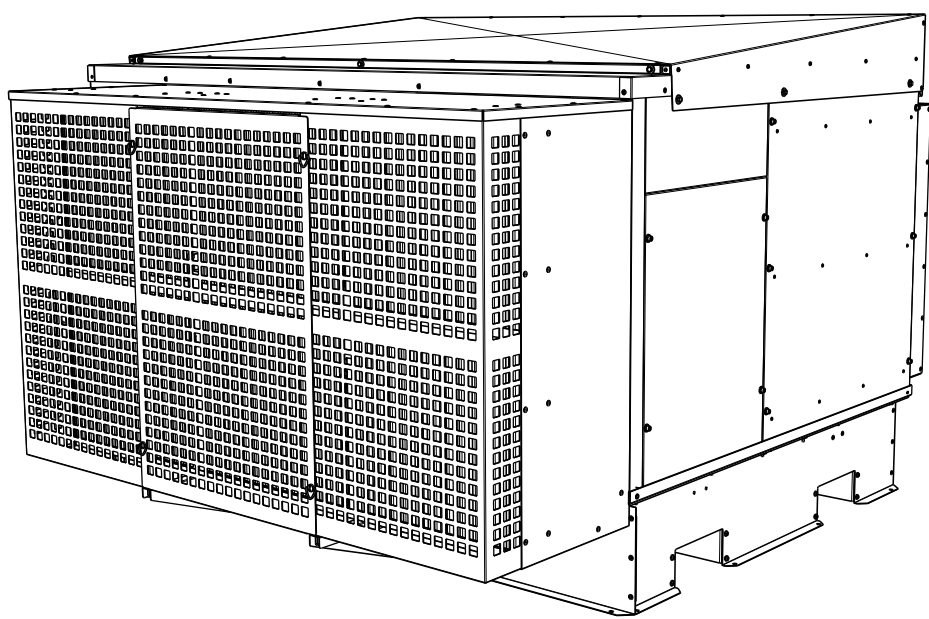




# INSTALLATION & OPERATION MANUAL

## CW-H10, CW-H15, CW-H15S, CW-H15S Plus

### MULTI-MAGIC MODELS



ORIGINAL ENGLISH INSTRUCTIONS



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## IMPORTANT SAFETY INSTRUCTIONS

### 1. READ AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

### 2. FOR EUROPE

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

### 3. FOR AUSTRALIA, NEW ZEALAND & OTHER NON-EUROPEAN COUNTRIES

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

---

Means for all pole disconnection must be incorporated in the fixed wiring in accordance with the wiring rules, adjacent to or on the cooler cabinet. If mounting on the cooler cabinet, take care not to puncture the water reservoir.

The following specifications for the cooler water supply are required:

**Water Connection** ½" BSP (Aus/Eur), ½" NPT (USA)

**Min Water Pressure** 100kPa (15psi)

**Max Water Pressure** 800kPa (115psi)

**Max Water Flow** 20 L/min (5.3 gallons/min)

**Max Water Temperature** 40°C (104°F)

This cooler is intended to be permanently connected to the water mains and not connected by a hose set.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

**CAUTION:** In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

### 4. FOR AUSTRALIAN BUSHFIRE PRONE AREAS

**WARNING** If this evaporative cooler is installed in a BAL-12.5 to 29 area the evaporative cooler dropper duct and flashings shall be adequately sealed at the roof to prevent gaps greater than 3mm. The dropper duct and flashings shall be non-combustible.

**WARNING: This cooler is NOT APPROVED for installation in any bushfire zoned area/property (BAL-12.5 to BAL-FZ).**

### 5. WARNING - TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

- a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
- c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- d) When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- e) Do not use this fan with any solid-state speed control device.
- f) Ducted fans must always be vented to the outdoors.

### 6. EMPLOYER AND EMPLOYEE RESPONSIBILITIES

The installation and maintenance of evaporative coolers at height has the potential to create Occupational Health and Safety issues for those involved. Installers are advised to ensure they are familiar with the relevant State and Federal legislation, such as Acts, Regulations, approved Codes of Practice and Australian Standards, which offer practical guidance on these health and safety issues. Compliance with these regulations will require appropriate work practices, equipment, training and qualifications of workers.

Seeley International provides the following information as a guide to contractors and employees to assist in minimising risk whilst working at height.



## IMPORTANT SAFETY INSTRUCTIONS

### 7. INSTALLER AND MAINTENANCE CONTRACTORS - RISK ASSESSMENT

#### 8. Installer and Maintenance Contractors

A risk assessment of all hazardous tasks is required under legislation. A risk assessment is an essential element that should be conducted before the commencement of work, to identify and eliminate the risk of falls or to minimise these risks by implementing control measures. There is no need for this to be a complicated process, it just is a matter of looking at the job to be done and considering what action(s) are necessary so the person doing the job does not injure themselves.

This should be considered in terms of:

- What are the chances of an incident happening?
- What could the possible consequence be?
- What can you do to reduce, or better still, completely get rid of the risk?

#### 9. SOME POINTS TO CONSIDER

- What is the best and safest access to the roof and working areas?
- If a worker is alone, who knows they are there and if they get into difficulty, how can they summon help?
- (Call someone on the ground? Mobile phone? etc.)
- What condition is the roof in? Should the trusses, underside or surface be checked?
- Does the worker have appropriate foot wear? (Flat sole jogger type is advisable)
- Are all power cables / extension leads safe and appropriately rated?
- Are all ladders, tools and equipment suitable in good condition?
- Where ladders are to be used, is there a firm, stable base for them to stand on? Can they be tied or secured in some way at the top? Is the top of the ladder clear of electricity supply cables?
- Is there a roof anchor to attach a harness and lanyard to? If so, instruction should be issued for the use of an approved harness or only suitably trained people used.
- Are all tools and materials being used, prevented from slipping and falling onto a person at ground level? Is the area below the work area suitably protected to prevent persons walking in this area?
- Does the work schedule take into account weather conditions, allowing for work to be

suspended in high winds, thunder storms/ lightning or other types of weather giving wet, slippery surfaces?

- Is there an on-going safety check system of harnesses, ropes, ladders and access/lifting equipment and where they exist on roofs, anchor points before the commencement of work?
- Is there a system which prevents employees from working on roofs if they are unwell or under the influence of drugs or alcohol?
- Are there any special conditions to consider i.e. excessive roof pitch, limited ground area, fragile roof, electrical power lines?

#### 10. OTHER IMPORTANT REQUIREMENTS

- Never force parts to fit because all parts are designed to fit together easily without undue force.
- Never drill holes in the tank of the cooler.
- Check the proposed cooler location, to ensure that it is structurally capable of supporting the weight of the cooler, or provide an adequate alternate load bearing structure.
- Ensure the installation complies with all local and national regulations with regards to electrical, plumbing and bushfire construction requirements.

#### MAINTENANCE NOTE

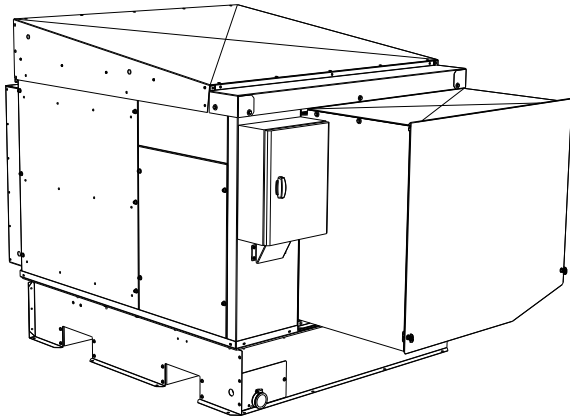
As with any product that has moving parts or is subject to wear and tear, it is **VERY IMPORTANT** that you maintain your cooler and have it regularly serviced. It is a condition of warranty cover for your cooler that you comply with all of the maintenance and service requirements set out in this Manual. Compliance with these requirements will prolong the life of your cooler. Further, it is also a condition of warranty cover that each item in the Maintenance Schedule in the Manual is filled out (by signing and dating it in the places indicated) when the item is completed.

Any failure to carry out the required maintenance and servicing, and any failure to fill out the maintenance schedule, will void your warranty.

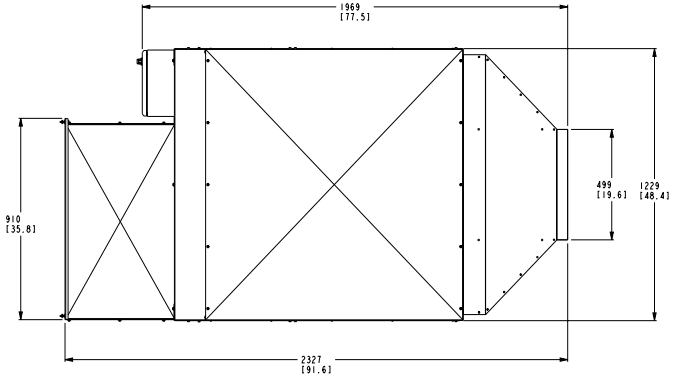
# COOLER VIEWS

## CW-H10 MODELS

### TOP



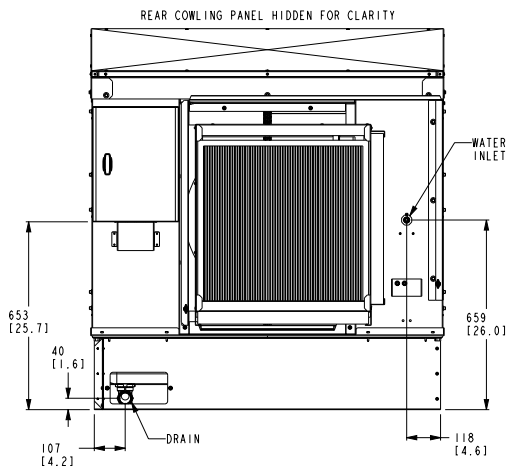
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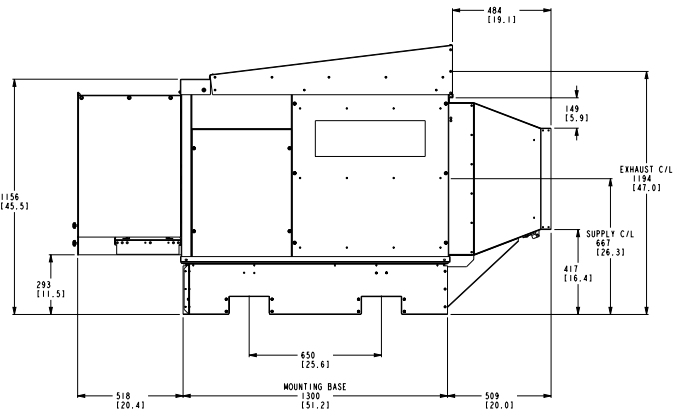
ILL3157-A

### REAR

### SIDE



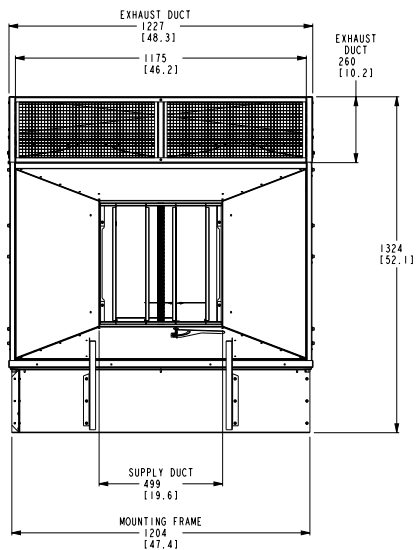
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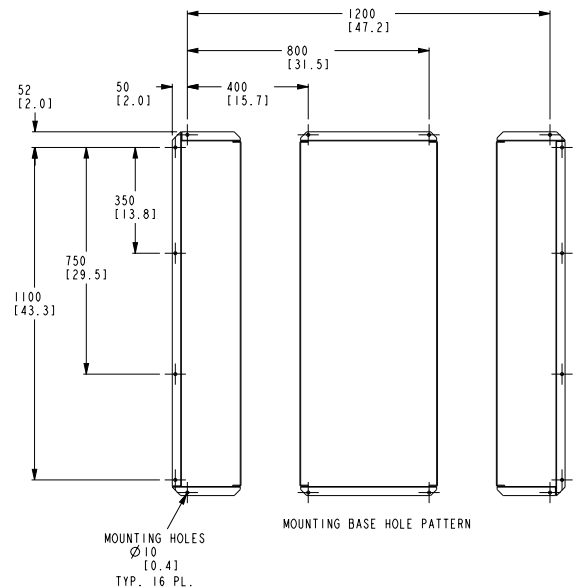
ILL3159-A

### FRONT

### BOTTOM



ILL3160-A

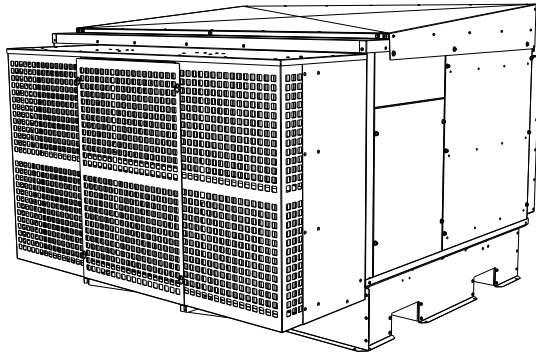


ILL3161-A

Dimensions are in mm (inches in brackets).

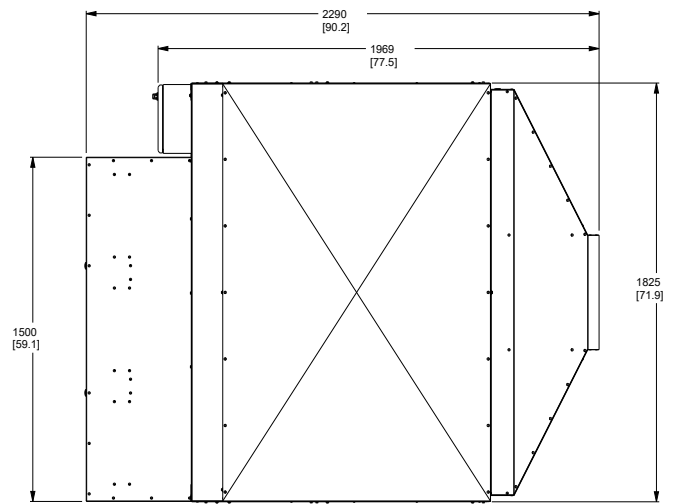
# COOLER VIEWS

## CW-H15 MODELS



ILL1916-C

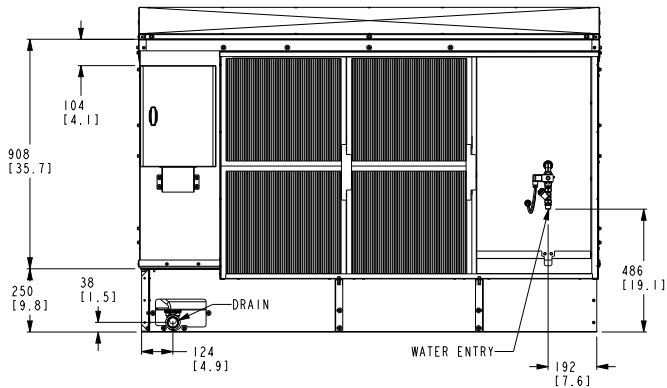
### TOP



ILL1918-C

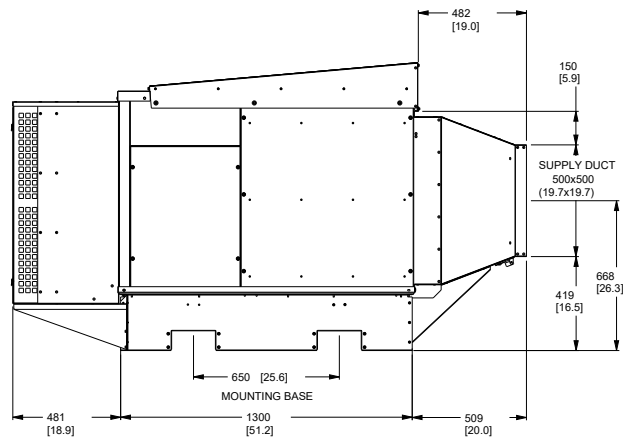
### REAR

REAR COWLING PANEL AND TWO RIGHT FILTERS  
HIDDEN FOR CLARITY



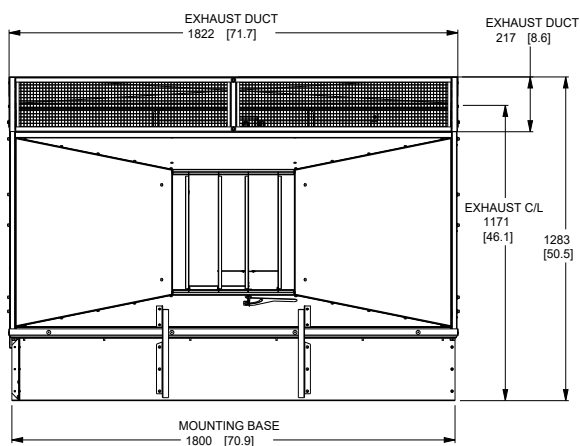
ILL1917-C

### SIDE



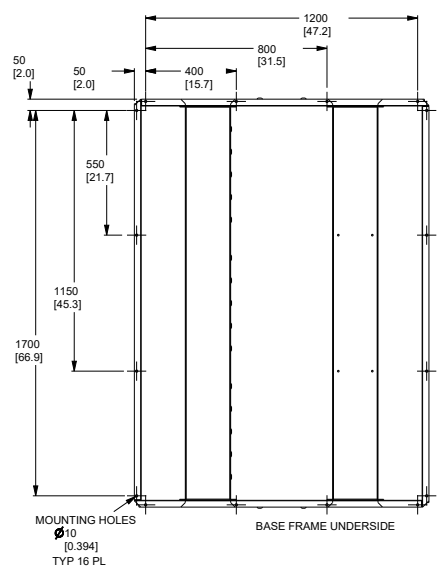
ILL1919-C

### FRONT



ILL2422-C

### BOTTOM

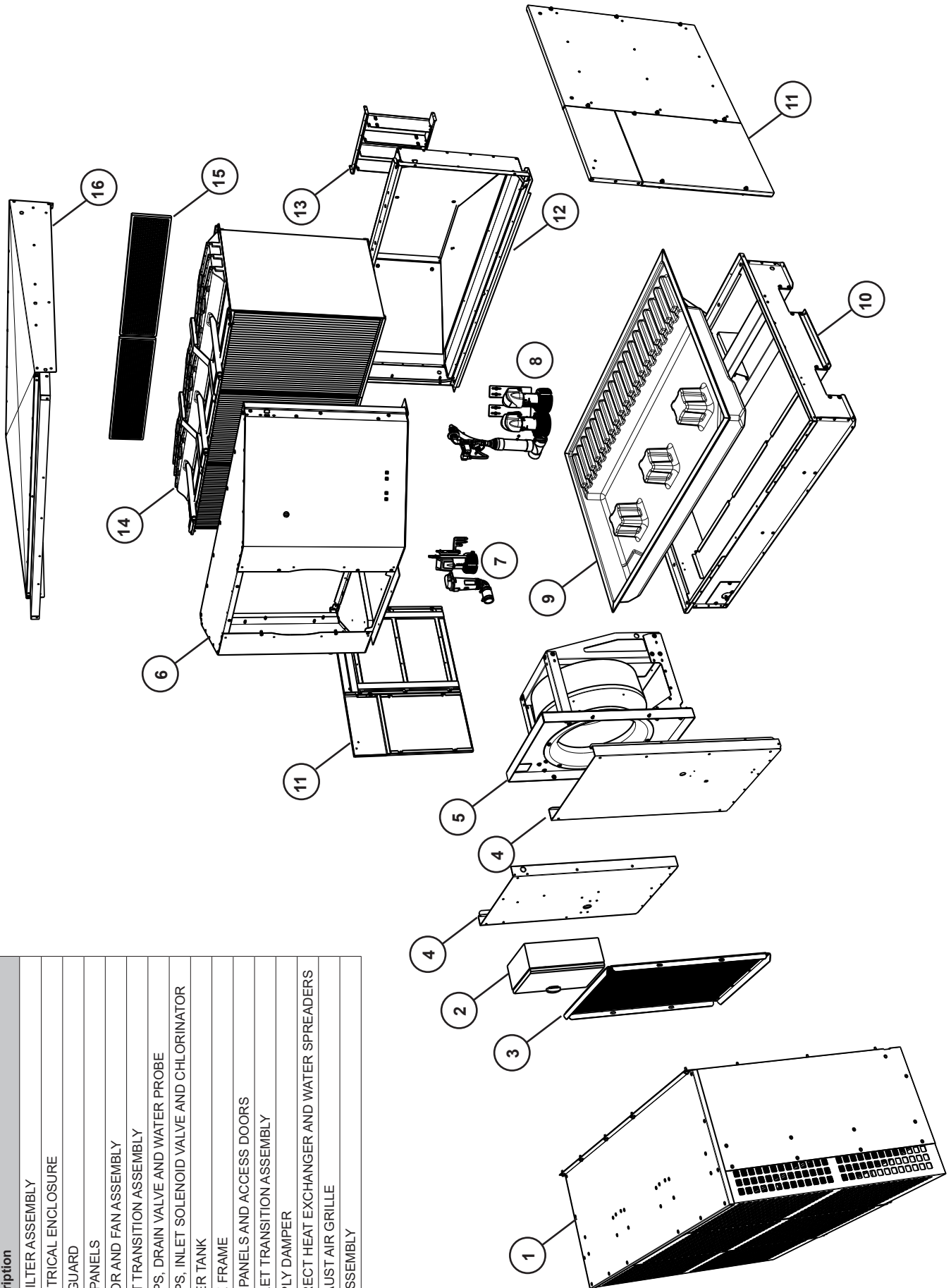


ILL1920-C

Dimensions are in mm (inches in brackets).

# COOLER VIEWS

Item	Description
1	AIR FILTER ASSEMBLY
2	ELECTRICAL ENCLOSURE
3	FAN GUARD
4	END PANELS
5	MOTOR AND FAN ASSEMBLY
6	INLET TRANSITION ASSEMBLY
7	PUMPS, DRAIN VALVE AND WATER PROBE
8	PUMPS, INLET SOLENOID VALVE AND CHLORINATOR
9	WATER TANK
10	BASE FRAME
11	SIDE PANELS AND ACCESS DOORS
12	OUTLET TRANSITION ASSEMBLY
13	SUPPLY DAMPER
14	INDIRECT HEAT EXCHANGER AND WATER SPREADERS
15	EXHAUST AIR GRILLE
16	LID ASSEMBLY

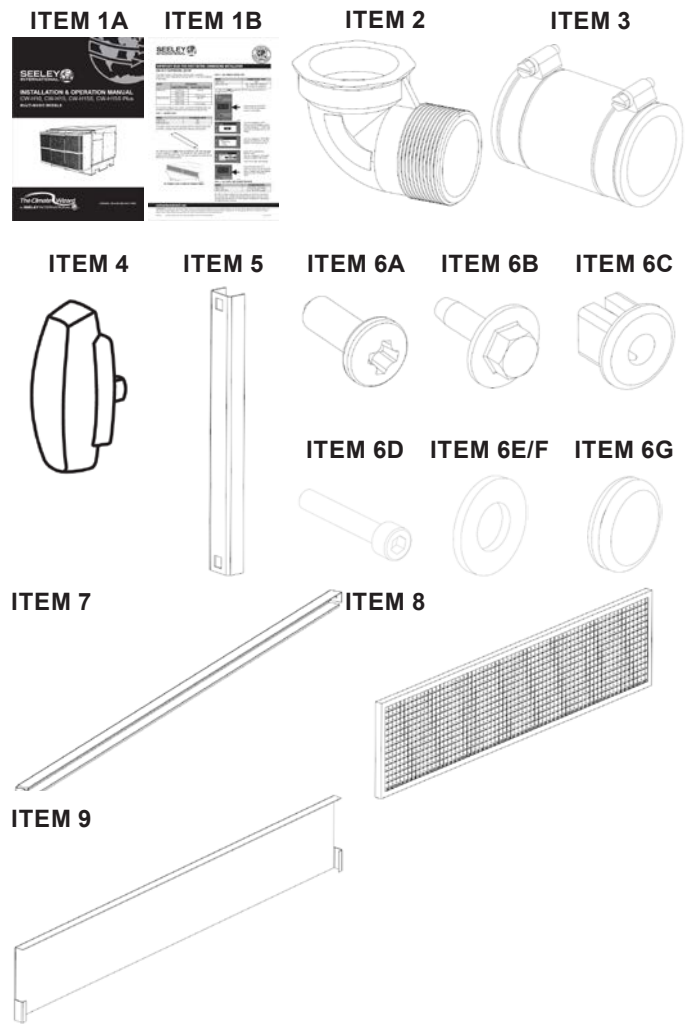


ILL24230

# COOLER CONTENTS

## INSTALLATION COMPONENTS

Item	Seeley Part	Description	QTY
1A 1B	859749 862801	Cooler Installation, Operation, Maintenance Manual Supercool Conversion Instructions (CW-H15S only)	1
2	861883	Adaptor Drain Elbow	1
3	866216	40mm Flexible Coupling	1
4	834798	Key, Control Box	1
5A 5B	637994 637393	Exhaust Centre Post CW-H15 or Exhaust Centre Post CW-H10	1
6A	805597	Screw 8AB x 1/2" Pan Phill Stainless Steel	10
6B	804446	Screw SEMS HX 14x3/4"	5
6C	804422	Plastic Grommet Size 14	5
6D	864341	Screw Set SHCS Stainless Steel M6x35mm	4
6E	864385	Washer Flat Stainless Steel M6x12.5x1.2mm	4
6F	864372	Washer Flat Nylon M8x16mm	4
6G	804579	Blanking Grommet 12.7x17.5mm	2
7	931685	Exhaust Side Rails (1176mm Long)	2
8A 8B	834789 834790	Exhaust Grille (869x205) CW-H15 or Exhaust Grille (571x247) CW-H10	1
9	637999	Exhaust Cap (CW-H15S Plus only)	2



## OPTIONAL COMPONENTS

Item	Seeley Part	Description
1	121956	Multi-Magic Wall Control Kit
2A 2B	134192 134215	Roofstand 0-10° (CW-H10) Roofstand 0-10° (CW-H15, H15S, H15S Plus)
3	121963	Multi-Magic Room Air Sensor Kit
4	121932	Multi-Magic Ambient Air Sensor Kit
5	121925	Multi-Magic Duct Air Sensor Kit
6	121918	Multi-Magic Pressure Sensor Kit



# TECHNICAL DESCRIPTION

## AIRFLOW

The cooler has a single fan which draws hot outside air through the rear-mounted air filters, through the dry channels of the air-to-air indirect evaporative heat exchangers and into the plenum at the front of the cooler.

Inside the plenum, the air is split into an exhaust flow and a supply flow.

The exhaust air passes through the wet channels of the air-to-air indirect evaporative heat exchangers and out through the upper exhaust grille back to atmosphere.

The supply air passes over a secondary direct evaporative cooling stage (Supercool cooler only), before entering the customer's ductwork.

## HEAT EXCHANGERS

### Indirect Evaporative Cooling (IEC) Stage

All coolers have air-to-air indirect evaporative heat exchangers, composed of alternating dry and wet channels separated by a membrane. CW-H10 has 2 and CW-H15 has 3.

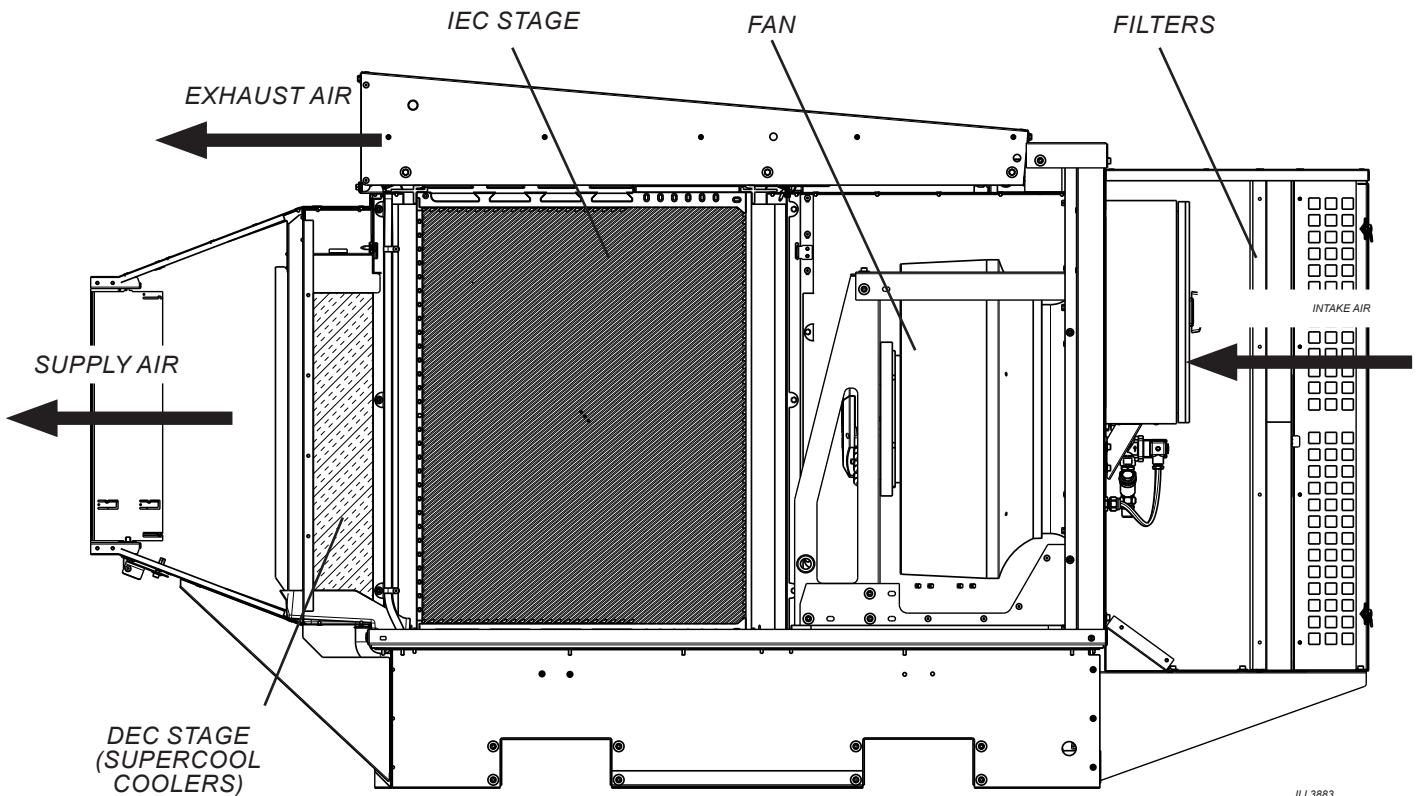
Through evaporation and conduction, heat is transferred from the air in the dry channels, across the membrane, and into the air in the wet channels.

The air in the dry channels is progressively cooled, but gains no additional moisture.

### Direct Evaporative Cooling (DEC) Stage

Supercool coolers are fitted with a secondary direct evaporative cooling stage.

The cooled air from the IEC stage passes over saturated Chillcel® media, where, through evaporation, it is cooled further with an increase in moisture content.

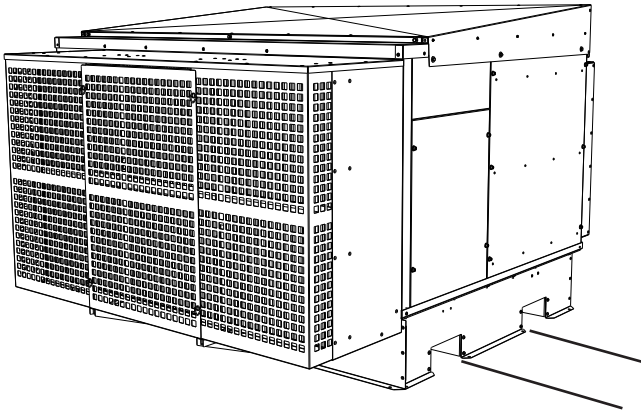




## TRANSPORT

### MOVING THE COOLER

The cooler can be moved by forklift truck. Only use the openings on the cooler. Do not lift through the pallet.



MIN. FORKLIFT TYNE  
GAP 460MM (18.2")

ILL1916-A

### LIFTING THE COOLER

The cooler may be lifted by crane with slings through the cooler base forklift truck tyne openings.

Do not attempt to lift using any cabinet features or by retrofitting lifting lugs. The cabinet may be damaged and/or lift safety compromised.

It is recommended to use a spreader bar on the straps or slings to protect the upper edges of the cooler with a corner protector beneath the lifting straps to avoid any damage to the cabinet during the lift.

### UNPACKING THE COOLER

The cooler will be delivered on a dedicated pallet and will be wrapped in plastic film which will need to be removed before installation.

A small bag of installation components along with the exhaust transition side rails and grilles can be found under the lid of the main cabinet of the cooler. The exhaust transition will need to be raised into place before operation.

**WARNING:** Once unwrapped, the exhaust transition assembly should be fitted together as soon as practicable to avoid loose components becoming lost/damaged and/or a hazard.

# INSTALLATION

## COOLER LOCATION

Check the proposed cooler location, to ensure that it is structurally capable of supporting the weight of the cooler, or provide an adequate alternate load bearing structure.

Model	Shipping Weight	Operating Weight
CW-H10	250kg (550lb)	255kg (560lb)
CW-H15	340kg (750lb)	330kg (728lb)
CW-H15S, H15S Plus	355kg (783lb)	345kg (761lb)

Always locate the cooler where it will receive a plentiful supply of fresh air, NOT in a recess where it may be starved for air or where the air is polluted. Provision must be made for access to electricity, water supplies and drains.

Air exiting the cooler exhaust is warm and heavily laden with moisture. Ensure the cooler's exhaust air will not cause corrosion or damage to other nearby items. Do not allow exhaust air to re-circulate into the air intake of the cooler.

Ensure the cooler location is a minimum of:

- 3.0m (10') from a solid fuel heater flue
- 1.5m (5') from a gas flue
- 1.0m (3.5') away from adjacent solar panels or similar roof mounted fixtures
- 6.0m (20') from a sewer vent
- 3.0m (10') (preferably 5.0m (17')) away from any TV antenna or antenna cables. Make sure the cooler is not between the antenna and the transmission tower that is providing the television signal to the home.

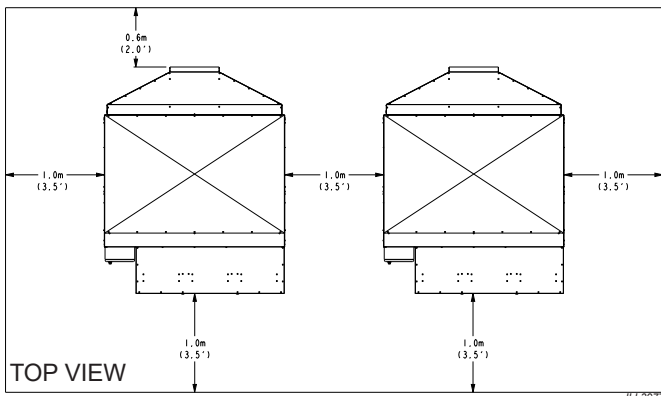
## ACCESS FOR SERVICING AND MAINTENANCE

The cooler should be installed in a position that allows adequate access for installation, and future maintenance and servicing activities. This should comply with installation guidelines and any local, State and National regulations.

Consider the following for installation location:-

- Which has clear access to and around the cooler
- Which is clear of fixtures in line with below clearances
- Which is clear of fall edges (> 3m (10') away)
- Which is structurally capable of supporting the weight of the cooler and service technicians

Required clearances around the cooler for future maintenance and servicing are shown below.

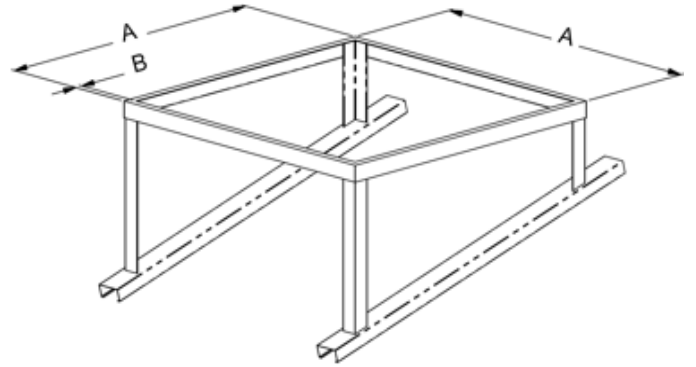


Extra service or warranty charges may apply for the cost of any equipment or additional labour involved in accessing the cooler if these guidelines are not met.

**Note!** Do you need to discuss the installation of items like safety anchor points with the customer?

## MOUNTING/SUPPORT

Roofstands, accommodating 0-10 roof pitches, are available for order via Seeley International. See Optional Components List.



ILL2426-A

The cooler base has a series of mounting holes for securing the cooler. Dimensions and locations of the mounting holes are shown in the cooler views at the beginning of this manual.

Where necessary, installers should use a sufficient number of suitably rated vibration isolation mounts to support the operating mass of the cooler.

## DRIP-TRAY

When coolers are installed indoors, or anywhere that water leakage could cause damage, install a corrosion resistant drip tray under the whole unit.

Recommended sizes:

**CW-H10:**  
1500 x 1300 x 50mm (59" x 51" x 2")

**CW-H15, H15S, H15S PLUS:**  
1500 x 1900 x 50mm (59" x 75" x 2")

Apply silicone sealant between drip-tray and cooler base at every fixing.

## SUPPLY AIR DUCT CONNECTIONS

Dimensions for the supply air duct interface are shown in the cooler views at the beginning of this manual.

Vibration absorbing flexible connections are recommended for all duct connections to the cooler.

All ducts must be independently supported.

All duct direction changes must utilise a generous radial turn with internal air directors to minimise turbulence and maximise efficiency.

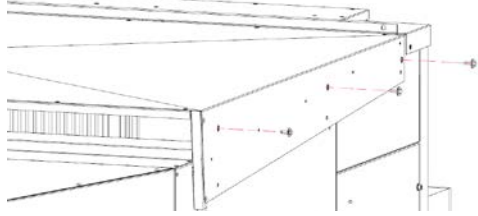
All ducts are to be suitably insulated to minimise temperature losses.

# INSTALLATION

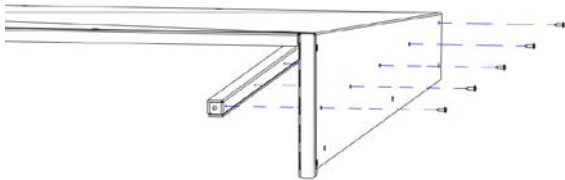
## EXHAUST TRANSITION ASSEMBLY

The exhaust transition is supplied in knock-down form and its components are to be found beneath the lid of the cooler and inside the component kit.

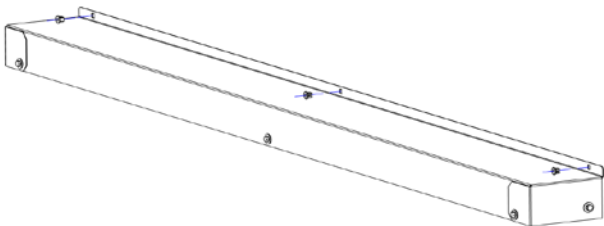
1. Unscrew the 6 x SCREW SEMS HEX 14 x 3/4" securing the large top panel to the cooler body.



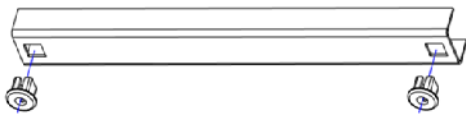
2. Lift the large top panel and locate;
  - 2 x EXHAUST SIDE RAILS (1176mm Long)
  - 2 x EXHAUST GRILLE
  - 2 x EXHAUST CAPS (CW-H15S Plus Only)
3. Fit the EXHAUST SIDE RAILS to the inside vertical faces of the large top panel with the supplied 10 x SCREW PAN PHILLIPS 8AB\*1/2" SS. Ensure the foam seal faces down



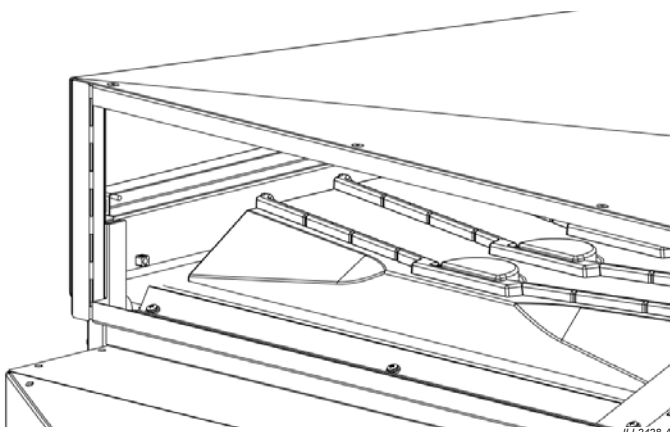
4. Fit the supplied 3 x PLASTIC GROMMET SIZE 14 to the rear lid panel upstand square holes.



5. Fit the supplied 2 x PLASTIC GROMMET SIZE 14 to the EXHAUST CENTRE POST.

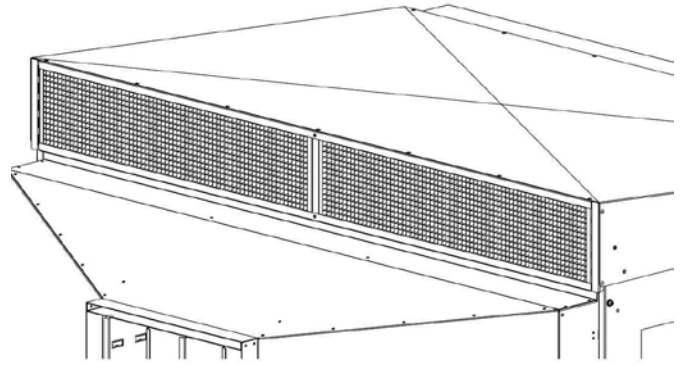


6. Position the large top panel over the top of the cooler, with the rear u-channel over the top of the upstand, the side rails sitting on the tops of the cooler side walls and the end posts sitting on the outside of the front tray.



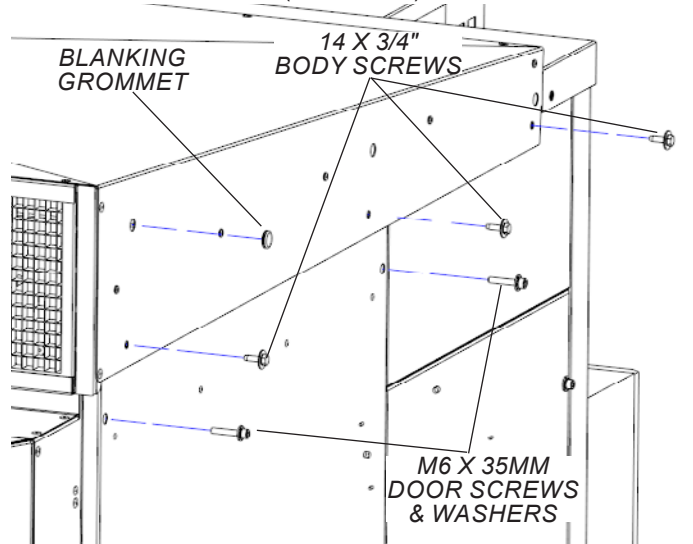
7. Slip the 2 x EXHAUST GRILLE and 1 x EXHAUST CENTRE POST into position, retained inside the top panel front u-channel.

**CW-H15S Plus ONLY:** Before fitting to the cooler, slide an EXHAUST CAP over the back of each EXHAUST GRILLE. The EXHAUST CAP covers the top portion of the EXHAUST GRILLE, and is designed to optimise the CW-H15S Plus performance.



Screw the exhaust transition assembly to the cooler body with the supplied 11 x SCREW SEMS HEX 14 x 3/4". (3 x Rear, 3 x Left, 3 x Right, 2 x Centre Post.)

8. Fit the supplied 4 x M6 x 35MM SET SCREW, STAINLESS STEEL FLAT WASHER, NYLON FLAT WASHER to the tops of both core access doors (2 each side). Apply a liberal coat of anti-seize paste to the screw thread prior to fitment.
9. Fit the supplied 2x BLANKING GROMMETS to the open holes in the lid sides (1 each side).



## EXHAUST DUCT REQUIREMENTS

If required for indoor installations the exhaust air may be ducted away from the cooler.

Dimensions for the exhaust outlet are shown in the cooler views at the beginning of this manual.

When designing the exhaust duct please note the following;

- Access to the heat exchanger cores requires the removal of the cooler lid/exhaust transition. Ensure any additional ducting is readily removable and/or lightweight.
- Where an installation requires extended exhaust ducts, the increase in static load should not exceed 20 Pa (0.08 in wg).

# INSTALLATION

## SUPERCOOL COOLERS

The CW-H Supercool coolers are fitted with Chillcel pads, providing additional Direct Evaporative Cooling (DEC).

They can be configured in two ways;

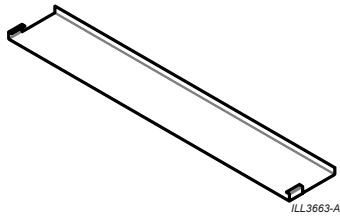
MODEL	PERFORMANCE	
	Supply Airflow Rate	External Static Pressure
CW-H15S	1100 L/s	120 Pa 0.52 in.w.g.
	3960 m3/h	
	2330 CFM	
CW-H15S Plus	1600 L/s	80 Pa 0.32 in.w.g.
	5760 m3/h	
	3390 CFM	

To correctly configure this cooler, ensure the following steps are followed during the installation and commissioning process;

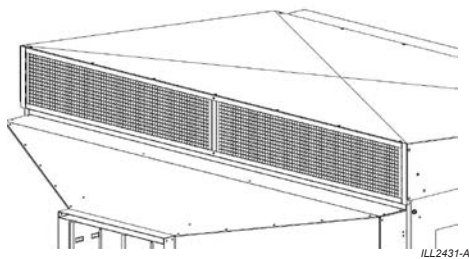
### STEP 1 - EXHAUST CAPS

MODEL	FIT EXHAUST CAPS?
CW-H15S	NO
CW-H15S Plus	YES

This CW-H cooler has been supplied with 2x Exhaust Caps (P/N 637999), shipped loose under other exhaust components.



For CW-H15S PLUS **ONLY** slide an EXHAUST CAP over the back of each EXHAUST GRILLE. The EXHAUST CAP covers the top portion of the EXHAUST GRILLE and is designed to optimise the CW-H15S PLUS performance.

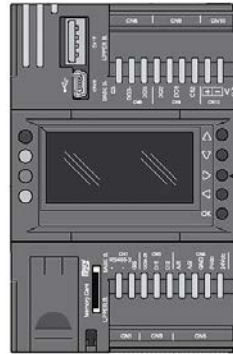


**FIT EXHAUST CAPS TO BACK OF EXHAUST GRILLE**

### STEP 2 - SET CORRECT DEVICE TYPE

MODEL	CHANGE DEVICE TYPE?
CW-H15S	YES
CW-H15S Plus	NO - FACTORY DEFAULT SETTING IS CORRECT

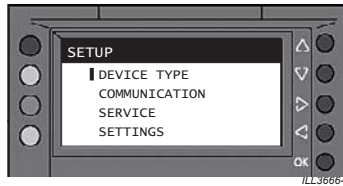
For CW-H15S **ONLY** access the SETUP menu on the PLC to change DEVICE TYPE.



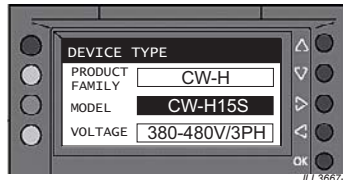
Push and hold the RIGHT button until the password screen is displayed.



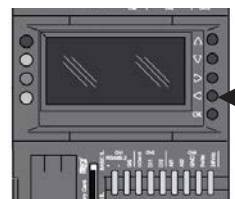
Use the navigation LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.



Use the navigation UP/DOWN buttons to move the cursor to DEVICE TYPE and push OK



Push OK to activate the MODEL field. Use the navigation UP/DOWN buttons to select CW-H15S. Push OK to save the setting.



Push and hold the LEFT button to return to the previous menu. Repeat until the display returns to the "CONTROL" menu.

### STEP 3 - SET SUPPLY AIR PLENUM PRESSURE

MODEL	PLENUM PRESSURE
CW-H15S	175 Pa (0.70 in.w.g.)
CW-H15S Plus	210 Pa (0.84 in.w.g.)

All CW-H coolers require the supply air plenum pressure to be correctly set. Follow the detailed instructions set out in the Commissioning section of this manual.



# ELECTRICAL REQUIREMENTS

## ELECTRICAL SUPPLY INSTALLATION

**INSTALLATION OF THE COOLER MUST CONFORM TO LOCAL ELECTRICAL RULES, REGULATIONS AND STANDARDS.**

It is a requirement of Seeley International that all coolers be wired with a dedicated circuit and circuit breaker/fuse at the distribution board.

A mains isolation switch, with all pole disconnection, shall be furnished by the contractor and installed adjacent to the cooler.

**IMPORTANT!** There are specific models for regional voltages and frequencies which are not interchangeable. Specifically, the fan motor(s), transformer(s) and pump(s) may be unique to the voltage/frequency of supply.

See the cooler rating label for the correct electrical data. Before connecting the device, make sure the power supply matches the cooler voltage and frequency.

### Electrical Supply Specification (50Hz Option):

**380-415V / 50 Hz / 3N~ / 4.9A (FLA)**

### Electrical Supply Specification (60Hz Options):

**440-480V / 60 Hz / 3~ / 9A (FLA) 11.5A (MCA) 15A (MOPD)**

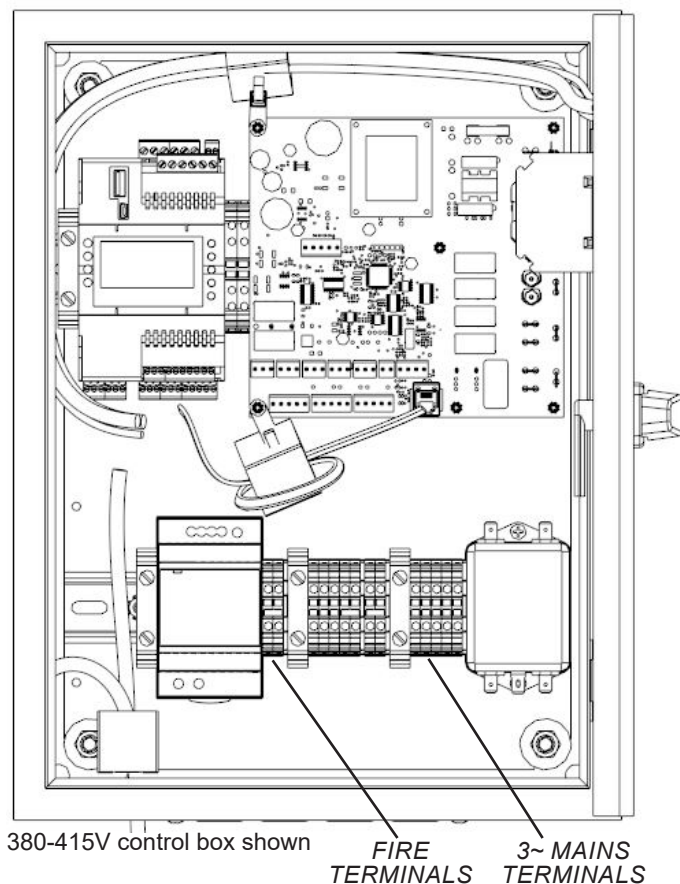
**200-240V / 60 Hz / 3~ / 11A (FLA) 14.5A (MCA) 20A (MOPD)**

**200-240V / 60 Hz / 1~ / 8A (FLA) 10.5A (MCA) 15A (MOPD)**

Mains power terminals are provided inside the electrical cabinet with glands provided for cable entry.

## MOTOR LOCKED-ROTOR PROTECTION

Due to the built-in motor locked-rotor protection, the starting current (LRA) is equal to or less than the nominal current (FLA).



## HIGH LEAKAGE CURRENT

**IMPORTANT! High leakage current. Earth connection essential before connecting supply.**

The cooler utilises a fan motor with a built in inverter drive. To comply with EMC regulations these drives adopt EMC filters that connect to the motor earth terminals. The normal filter leakage current to earth may accumulate to a total leakage current in excess of 10mA. For asymmetrical power systems or if a phase fails, the leakage current can increase to a multiple of the nominal value.

To comply with regulations and to prevent electric shock this leakage current must be properly addressed.

In particular, the earth terminal at the mains power point of connection must be properly connected and earthed. Power must not be applied until this is correctly completed.

## RESIDUAL CURRENT CIRCUIT BREAKER (RCCB)

The cooler utilises a fan motor with a built-in variable speed drive (VSD). If local electrical standards require the use of a residual current circuit breaker (RCCB), only AC/DC-sensitive residual current devices (type B) are permissible. If incorrectly selected and/or sized, pulsed charging currents from the capacitors in the integrated EMC filter can lead to the instant tripping of RCCB when the cooler power supply is switched on.

## FIRE TERMINALS

A pair of terminals labelled "FIRE" are provided for integration with a building fire management system.

These terminals provide power to the cooler controls and are supplied with a bridge.

To use with a building management system, remove the bridge and connect the terminals through a NORMALLY CLOSED relay which opens in a fire event.

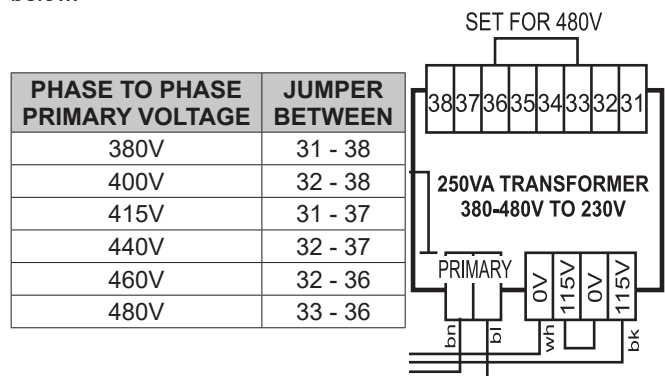
Interrupting power to the PLC will immediately stop all cooler components, including fans.

## 24VDC POWER SUPPLY

The cooler is provided with a 24VDC switch mode power supply for use with internal components and optional sensor accessories. The maximum power available for external components is 30W.

## TRANSFORMER TAPPINGS

440-480V / 3~ coolers ONLY are fitted with a transformer to power the cooler electronics. By default the input voltage jumper is set for 480V. If the power supply has a different phase-to-phase voltage, reposition the jumper as per the table below.



# WATER REQUIREMENTS

## WATER SUPPLY INSTALLATION

The cooler requires a permanent water supply to be connected. A built-in Inlet Solenoid Valve, controlled by the water management system, allows water into the cooler when required.

### INSTALLATION OF THE WATER SUPPLY MUST CONFORM TO LOCAL PLUMBING RULES, REGULATIONS AND STANDARDS.

The following specifications for water supply are required:

#### Water Connections:

1/2" BSP. Use flexible hose for the final connection to assist with future maintenance.

#### Water Supply:

100kPa (15psi) - 800 kPa (115psi)

10L/min (2.6 gal/min) MINIMUM

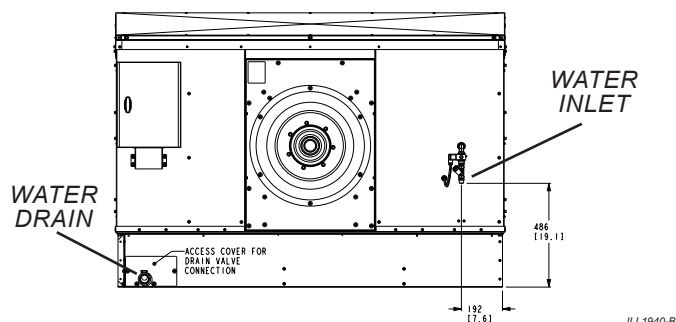
20L/min (5.3 gal/min) RECOMMENDED

#### Water Supply Temperature:

40°C (105°F) MAXIMUM

#### Water Supply Salinity:

100 to 1150µS/cm



## WATER SUPPLY PRESSURE REGULATION

The Installer must provide a pressure regulator in the water supply line adjacent to the cooler to regulate water supply pressures between 100kPa (15 PSI) and 800kPa (115 PSI).

**Important!** Water pressures which are lower than 100kPa (15 PSI) will prevent the inlet solenoid valve from opening.

**Important!** Water pressures which are higher than 1000 kPa (145 PSI) and/or water temperatures which are higher than 40°C (105°F) risk inlet solenoid valve failure.

Water pipes installed on the outside of a building, or any other exposed location, shall have adequate insulation to protect against freezing in the winter and solar radiation heating in the summer.

If a non-return valve is installed in the water supply line, it is recommended that a suitable pressure relief valve is also installed between the cooler and the non-return valve to limit the pressure rise associated with the heating effects of ambient temperature and solar radiation.

## WATER SUPPLY ISOLATION

The Installer must provide a manual 1/4 turn ball type shut off valve (do not use a stop cock) in the water supply line adjacent to the cooler, subject to local plumbing regulations. This allows the water supply to be isolated whenever work needs to be done on the cooler.

In areas where temperatures can cause water supply pipes to freeze, a drain down facility should be provided during the installation. This drain down facility must be activated prior to freezing conditions to avoid possible damage to the cooler components.

## WATER SUPPLY FILTRATION

The cooler is provided with an inlet water strainer in the water supply line to prevent any debris from entering and damaging cooler components.

**Important!** Flush the water pipe to remove any contaminants (swarf, filings or dirt) before final fitting. Contaminants can lodge in the inlet solenoid valve, preventing it from functioning correctly. External filtration should be a minimum of 500 microns.

The cooler's water management system is designed to use water that is suitable to be classified as 'potable' and fit for human consumption. If alternative water (including rain water) is to be used that contains unusually high or low levels of salinity, hardness, acidity or chemical contaminants, then additional filtration or treatment systems should be employed to render the water 'potable'.

## WATER HAMMER

Not all installation pipeworks are the same, and some may require additional prevention against water hammer. If water hammer is a problem, it is the responsibility of the Installer to fit an appropriate water hammer arresting device external to the cooler.



# WATER REQUIREMENTS

## WATER DRAIN INSTALLATION

The cooler requires a permanent water drain to be connected. A built-in drain valve, controlled by the water management system, releases water from the cooler when required.

**INSTALLATION OF THE WATER DRAIN MUST CONFORM TO LOCAL PLUMBING STANDARDS.**

### Drain Connections:

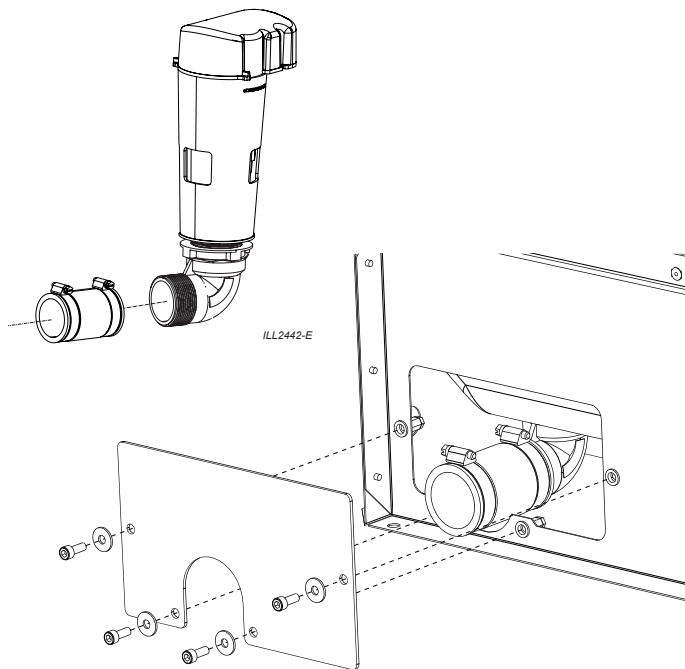
The cooler installation kit contains components to configure the drain valve discharge to one of the following options:

- Down or Rear Discharge
- 1.5" (40mm) BSP Male or 1.5" Flexible Coupling.

### Drain Rate:

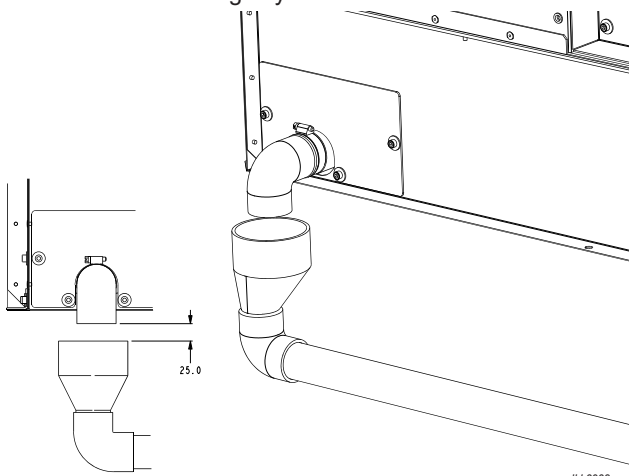
15 L/min (4 gal/min)

**Important!** Water drained from the drain valve is high in salinity and must be carried away to a suitable discharge point on the building or property. Never drain the water directly onto the roof



The removable access panel should be re-assembled after drain line installation.

**Important!** Drainage systems with long pipe runs, multiple entry points, and/or incorporating traps shall use a tundish or similar device to create a 25mm (1") air-gap between the bottom of the drain valve and the drainage system.



# COOLER CONTROL COMPONENTS

## FAN SPEED MANAGEMENT SYSTEM

The cooler fan is driven by an electronically commutated DC motor with integrated variable speed drives (VSD) that allows for 0-10Vdc speed control.

The fan speed is controlled by the inputs from the Primary Control Method (e.g. Multi-Magic Wall Controller). Depending upon the control type, speed control is either continuously variable or in 10 discrete speed steps (Speed 1-10).

If, when commanded to start, the fan start delay option is enabled, the fan will remain off until the delay timer has expired.

Upon starting, the fan will initially run at a fixed slow speed for 30 seconds before increasing to the requested speed.

If pre-wet is enabled, the supply fans will remain at the fixed slow speed until the pre-wet cycle is complete.

## WATER MANAGEMENT SYSTEM

The cooler contains multiple parts to supply, distribute and manage the water needed for the heat exchangers.

### Water Inlet Solenoid Valve

The inlet solenoid valve allows water into the water reservoir. It is open during the following phases.

- Initial Tank Fill  
Trigger: Entering IEC or DEC mode.
- IEC Tank Fill  
Trigger: Indirect Watering Cycle = TANK FILL.
- DEC Only Tank Fill  
Trigger: Low Probe = WET.

Once open, the inlet solenoid valve will remain open until the water high probe has detected water for at least 5 seconds.

If the water drain valve is open, the inlet solenoid valve will remain closed.

### Indirect Pump Control (IEC Watering Cycle)

The indirect pumps move water from the reservoir to the 3 indirect heat exchangers.

The indirect heat exchangers do not require continuous watering and the pump runs on the following cycle

- Tank Level OK - Water filled to high probe and waiting for next IEC pump cycle to start.
- Indirect Pump Running (60 seconds).
- Core Drain - IEC pump stopped and excess water is draining back to the reservoir (1 minute 30 seconds)
- Tank Fill - IEC pump stopped and inlet solenoid valve open and re-filling to high probe (6 minutes 30 seconds)

Total IEC pump on time = 1 minute

Total IEC pump off time = 8 minutes

### Direct Pump Control (Supercool coolers only)

The direct pump moves water from the reservoir to the Chillcel® media. When running in DEC mode the direct pump runs continuously. Excess water from the Chillcel® media drains back to the reservoir.

## Water Salinity Control

As water evaporates from the heat exchangers, the salinity of the remaining water naturally increases.

The water management system uses the 3-pin water probe to measure water conductivity as a proxy for salinity. The probe can sense conductivity down to 9 µS (about 4ppm) .

Water conductivity is updated every time water reaches the high probe and, when it exceeds the upper set point, a salinity drain cycle will start.

### Chlorinator Control

The chlorinator is composed of specially treated plates. When energised and submerged in water, electrical current flows between the plates generating chlorine which is known to kill bacteria in water supplies.

The chlorinator is active when the cooler is in IEC mode, AND the water level is above the bottom probe AND the water conductivity is >1500 µs/cm.

If the water conductivity remains <1500µs/cm for 24 hours, a clean tank drain cycle will start.

### Water Tank (Reservoir) Drain Valve

The drain valve will automatically open when power is first applied to the cooler. It will close again when IEC or DEC mode is enabled.

During a salinity drain cycle, the drain valve opens until the water level falls below the low probe, then the drain valve closes immediately, and inlet solenoid valve opens to refill the reservoir with fresh water.

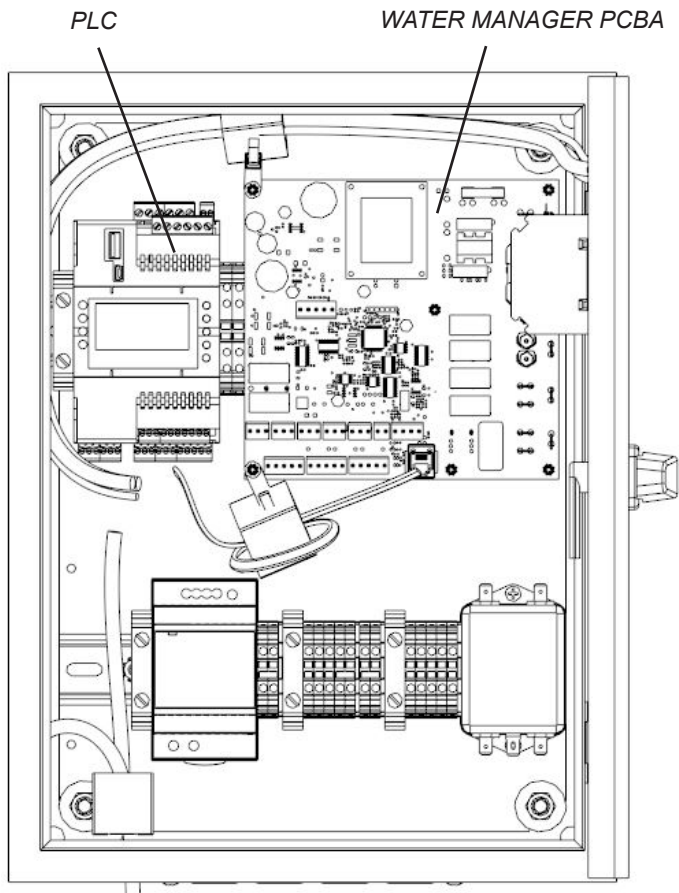
During a clean water drain cycle, the drain valve remains open for 10 minutes, after which the inlet solenoid valve opens to refill the reservoir with fresh water.

The drain valve will open if it has been 3 days since IEC or DEC mode was last run.

# COOLER CONTROL COMPONENTS

## CONTROL COMPONENTS

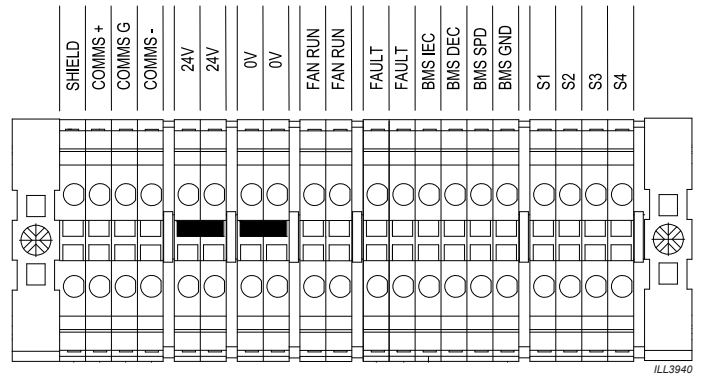
Cooler logic and controls are handled by a PLC in conjunction with a Water Manager PCBA, both located in the controls enclosure.



## INPUT AND OUTPUT TERMINALS

A series of input and output terminals are located on the door of the controls enclosure.

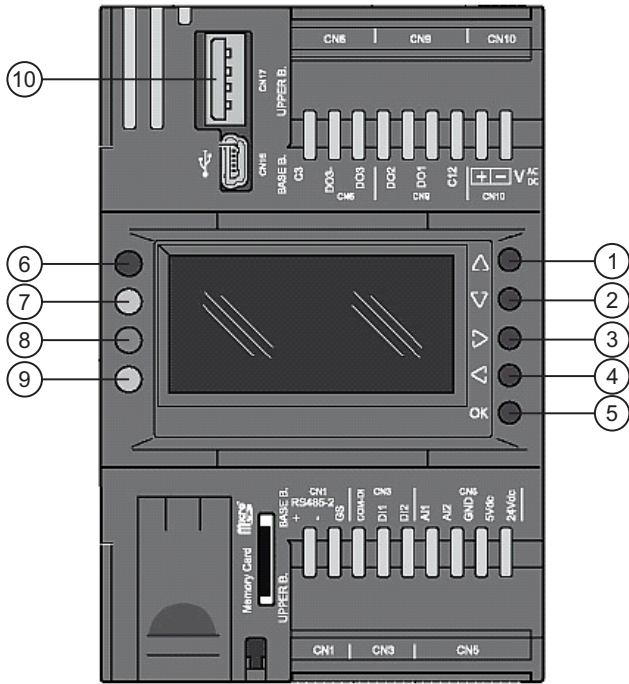
See MULTI-MAGIC CONTROLS for terminal functions.



ILL3940

# MULTI-MAGIC CONTROLS

## MULTI-MAGIC PLC



ILL3622-A

Item	Description	Item	Description
1	UP – moves cursor up to next variable <u>or</u> increase value in edit mode	6	Green LED – Power Status
2	DOWN – moves cursor down to next variable <u>or</u> decrease value in edit mode	7	Red LED – Fault Status. Number of flashes indicates fault code
3	RIGHT – opens the next page	8	Yellow LED
4	LEFT – opens the previous page	9	Green LED – Flashes if wall control/MODBUS primary is connected
5	OK (ENTER) – select/edit value	10	USB Type A for USB memory stick

For all PLC screens:

- Use the navigation UP/DOWN buttons to scroll through the options
- Push the OK button to edit the option.
- Use the UP/DOWN buttons to change the value of the option.
- Push the OK button again to confirm the selection and exit edit mode.

Use the navigation LEFT/RIGHT buttons to switch between the “CONTROL”, “MONITOR”, “SENSORS” and “HISTORY” screens.

To return to the previous menu screen long press the LEFT button

## CONTROL SCREEN

This screen allows the user to select the cooler's primary input control method, including controlling the cooler manually from the PLC via Local Mode.



ILL3624

Item	Description	Item	Description
1	<u>Primary Input Control Method:</u> LOCAL WALL = Multi-Magic Wall Controller (RS-485) BMS = Low Voltage BMS Modbus (RS-485) BACnet (MS/TP or IP)	4	PLC Software Revision
2	<u>Cool Mode</u> Vent = Fan only. Indirect = Fan & Indirect Evaporative Cooling Direct = Fan & Direct Evaporative Cooling* Supercool = Fan & Indirect & Direct Evaporative Cooling*	5	Message Bar. Shows current cooler status.
3	<u>Fan Speed</u> If Control Method = Local; Sets Fan Speed 0-10 Otherwise display 0-100% (BMS / MODBUS) or display 0-10 (Wall Controller / BACnet)	6	<u>Fault.</u> Displays if a fault condition is active.

\*NOTE. Direct Cool Mode and Supercool Mode are available for Supercool enabled coolers only.

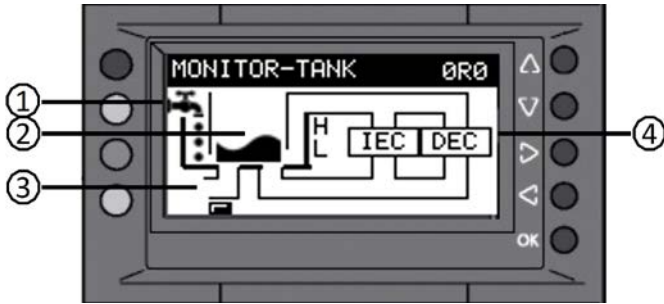
**IMPORTANT!** The cooler can only accept control inputs from the primary control method selected on the CONTROLS screen, however control outputs are available to be read from alternative communication methods.

For example, when Wall Controller is selected (RS-485), the cooler will only accept inputs (e.g. Fan Speed) from a Multi-Magic Wall Controller, whereas outputs (e.g. Fault Status) can be read from the low voltage terminals (BMS).

# MULTI-MAGIC CONTROLS

## MONITOR SCREENS

These screens allows the user to see the status of the cooler components.



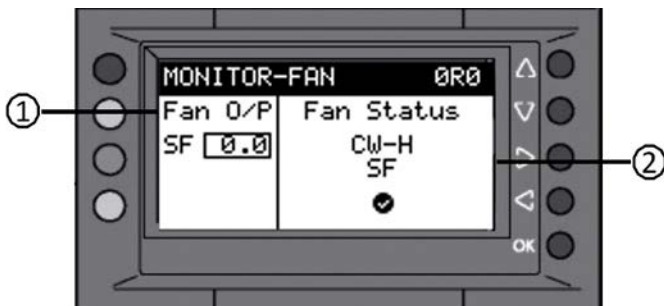
ILL3623

Item	Description	Item	Description
1	Displays status of the Inlet Water Solenoid Valve. Image shows running water into tank when valve is open.	3	Displays status of the Drain Valve. Image shows water emptying from tank when valve is open.
2	Displays the tank water level. Image empty when water not detected at low probe. Image half full when water detected at low probe only. Image full when water detected at both low and high probes.	4	Displays the status of the pumps. Image shows flowing water when the Indirect Pump (IEC) and/or Direct Pump (DEC) is running.



ILL3870

Item	Description	Item	Description
1	Displays water salinity level (µS/cm) measured by 3 pin probe.	3	Water Manager PCBA Software Revision
2	Displays status of the Chlorinator. ON/OFF OK <input checked="" type="checkbox"/> FAULT <input checked="" type="checkbox"/>	4	Displays PWM of the Chlorinator 0...100%

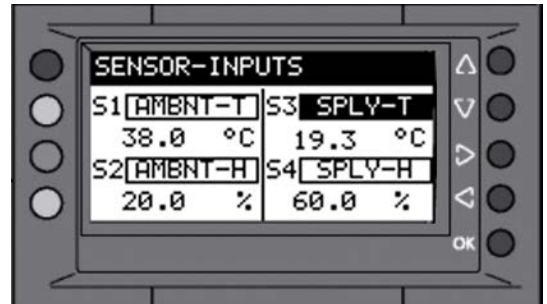


ILL3931

Item	Description	Item	Description
1	Displays the status of the fan motors. 0-10Vdc analogue output from the PLC to the supply fan (SF)	2	CW-H Supply Fan (SF) Status OK <input checked="" type="checkbox"/> FAULT <input checked="" type="checkbox"/>

## SENSOR SCREENS

These screens allow the user to configure up to four 0-10Vdc input channels, labelled S1 to S4, for use with optional sensor accessories.



ILL3710-C

Tag	Description
<b>Ambient Air Sensor</b>	
AMBNT-T	Temperature, 0-10V, -40...+70C or -40...+158F
AMBNT-H	Relative Humidity, 0-10V, 0...100% rh
<b>Room Air Sensor</b>	
ROOM-T	Temperature, 0-10V, 0...+50C or +32...+122F
ROOM-H	Relative Humidity, 0-10V, 0...100% rh
<b>Supply Air Duct Sensor</b>	
SPLY-T	Temperature, 0-10V, 0...+50C or +32...+122F
SPLY-H	Relative Humidity, 0-10V, 0...100% rh
<b>Differential Air Pressure Sensor</b>	
PRESSURE	Pressure, 0-10V, 0...+500Pa or 0...+2.00"wg

Temperature and Relative Humidity sensors require two input channels. When configuring the first channel for Temperature, the second channel is automatically configured for Relative Humidity.

Pressure sensors require only one input channel.

Installing sensor accessories does not automatically activate additional sensor functionality. Customers require a control method (e.g. Multi-Magic Wall Controller or 3rd Party Building Management System) to use the measured values as required.

See separate Installation Instructions for each type of sensor for example functions.

## HISTORY SCREENS

These screens allow the user to view time stamped records of the coolers fault code history and water drain history. Each history can be reset by selecting the CLEAR button.



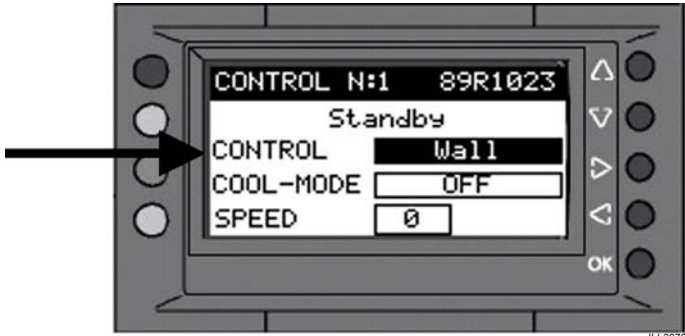
ILL3930



# MULTI-MAGIC CONTROLS

## CONTROL METHOD OPTION 1 (WALL)

### MULTI-MAGIC WALL CONTROLLER (WALL)



ILL3872

The Multi-Magic Wall Controller, (supplied separately) can control up to a maximum of 15 Multi-Magic coolers acting as a Primary Controller over a Modbus RS-485 network.

It incorporates sensors to automatically regulate local zone temperature and relative humidity.

Ensure "WALL" is selected on the CONTROL screen.



Refer to the RS-485 wiring rules section in this manual for communication cable installation instructions and refer to installation literature provided with the Multi-Magic Wall Controller for additional setup instructions.

## SETTING DEVICE NODE ADDRESS (WALL)

When using the Multi-Magic Wall Controller, each cooler on the RS-485 network requires a unique Node Address.



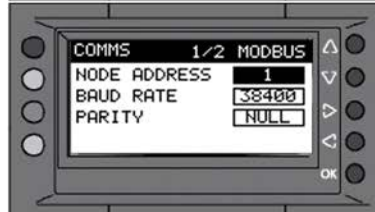
Push and hold the RIGHT button until the password screen is displayed.



Use the LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.



Use the UP/DOWN buttons to select COMMUNICATION and push OK.



Use the UP/DOWN buttons to select NODE ADDRESS.

Push OK to activate the field.

Use the UP/DOWN buttons to set a unique value from 1 to 15 for each cooler and push OK.

Note:  
Baud Rate must be 38400  
Parity must be NULL



Use the UP/DOWN buttons to select SAVE.

Push OK to activate the field.

**AFTER CHANGING NODE ADDRESS, CYCLE POWER TO COOLER TO SAVE CHANGE.**



ILL3865

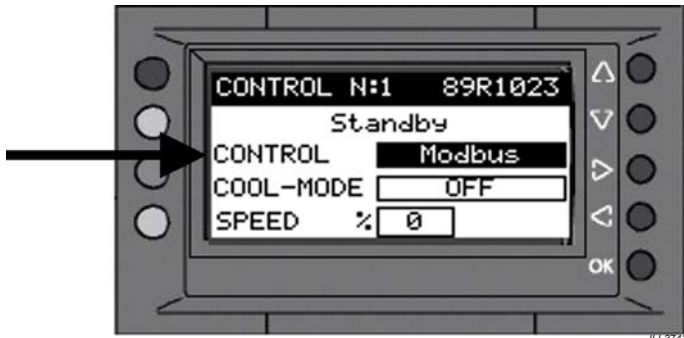
Once set, the cooler NODE ADDRESS will appear on the CONTROLS page.



# MULTI-MAGIC CONTROLS

## CONTROL METHOD OPTION 2 (MODBUS)

### 3RD PARTY MODBUS RS-485 PRIMARY CONTROL



The basic functions of cooler can be controlled via a 3rd Party Modbus RS-485 Primary Controller.

Ensure "MODBUS" is selected on the CONTROL screen.

Modbus control registers are available for.

- Vent Mode
- IEC Cool Mode
- DEC Cool Mode\*
- Fan Speed (0-100%)
- Fault Code Reset
- Manual Drain

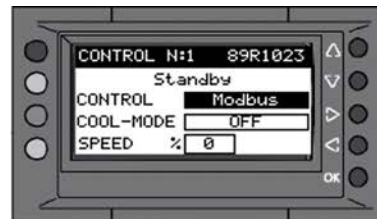
**\*Note:** DEC Cool Mode only operates on Supercool coolers

Additional read only registers are available for monitoring the status of the connected coolers. See Appendix C for the full register list.

Refer to the RS-485 wiring rules section in this manual for communication cable installation instructions

## COMMUNICATION SETUP (MODBUS)

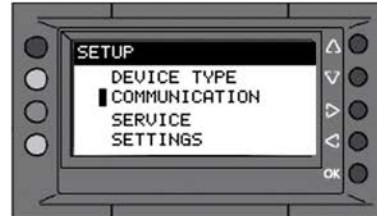
All secondary devices (coolers) on the Modbus RS-485 network requires a unique Node Address and communication setting which match the 3rd Party Primary Controller.



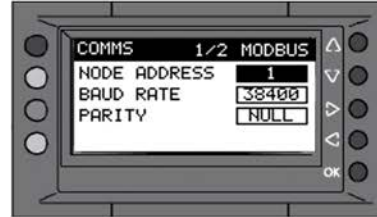
Push and hold the RIGHT button until the password screen is displayed.



Use the LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.



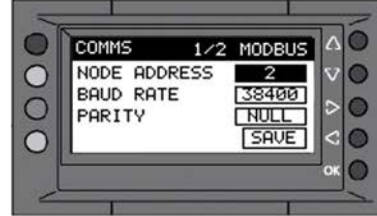
Use the UP/DOWN buttons to select COMMUNICATION and push OK.



Use the UP/DOWN buttons to and push OK to activate the available fields.

Set a unique NODE ADDRESS from 1 to 99 for each cooler.

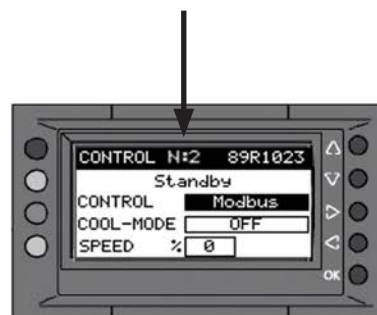
Set BAUD RATE and PARITY values to match the Primary Modbus Controller.



Once finished select SAVE.

Push OK

**AFTER CHANGING COMMUNICATION SETTINGS, CYCLE POWER TO COOLER TO SAVE CHANGE.**

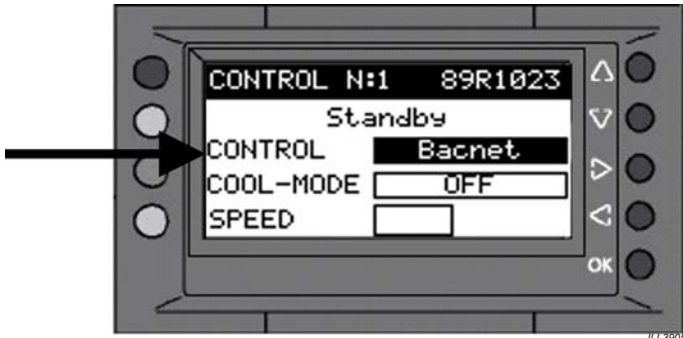


Once set, the cooler NODE ADDRESS will appear on the CONTROLS page.

# MULTI-MAGIC CONTROLS

## CONTROL METHOD OPTION 3 (BACNET)

### 3RD PARTY BACNET MS/TP OR BACNET IP PRIMARY CONTROL



The basic functions of cooler can be controlled via BACnet using either BACnet MS/TP or BACnet IP protocols.

Ensure "BACNET" is selected on the CONTROL screen.

BACnet control objects are available for.

- Cooler ON/OFF
- Vent Mode
- IEC Cool Mode
- DEC Cool Mode (Supercool only)
- Fan Speed (0-10)
- Fault Code Reset
- Manual Drain

Additional monitoring objects are available for the status of the connected coolers. See Appendix D for the full object list.

### BACNET PROTOCOL SELECTION



Push and hold the RIGHT button until the password screen is displayed.



Use the LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.



Use the UP/DOWN buttons to select COMMUNICATION and push OK.



Use the LEFT/RIGHT and UP/DOWN buttons to  
1. Select either BACnet MS/TP or BACnet IP

### BACNET MS/TP COMMUNICATION SETUP



With BACnet MS/TP selected.

Use the UP/DOWN buttons to set a unique DEVICE ID from 1 to 99 for each cooler.



Press RIGHT button.

Set BAUD RATE and PARITY values to match the BACnet Controller.

Once finished, select SAVE.

Push OK



**AFTER CHANGING COMMUNICATION SETTINGS, CYCLE POWER TO COOLER TO SAVE CHANGE.**

### BACNET IP COMMUNICATION SETUP



With BACnet IP selected

Use the UP/DOWN buttons to set a unique DEVICE ID from 1 to 99 for each cooler.

Press RIGHT button.



Set a unique Ethernet IP ADDRESS for each cooler. Set GATEWAY, NETMASK ADDRESS, and IP PORT to match the BACnet Controller.

Once finished, select SAVE.

Push OK



**AFTER CHANGING COMMUNICATION SETTINGS, CYCLE POWER TO COOLER TO SAVE CHANGE.**

Note. Only one BACnet protocol may be active at a time.

# MULTI-MAGIC CONTROLS

## RS-485 NETWORK SETUP

The Multi-Magic Wall Controller, 3rd Party MODBUS and BACnet MS/TP control options all use the RS-485 serial protocol.

### RS-485 CABLE SPECIFICATIONS

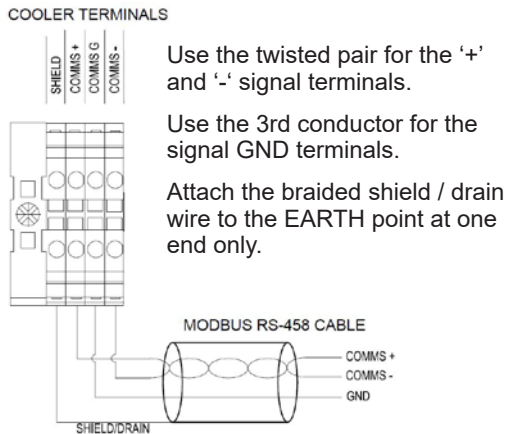
The Installer must supply communication cable between the primary controller and connected coolers to the following specification.

- Suitable for RS-485 applications
- Minimum 1 twisted pair (TP) and a third conductor
- Copper conductors
- 0.5 mm<sup>2</sup> / AWG 20
- Braided shield with drain wire
- Characteristic impedance 120Ω
- Nominal capacity between conductors 89 pF/m
- Nominal capacity between conductors and shielding 161pF/m

**Note:** Non-shielded cables are not protected against electromagnetic interference which can cause signal degradation.

### RS-485 CABLE CONNECTIONS

The RS-485 serial terminals are located on the inside of the control enclosure door.



ILL3705-B

MODBUS RS-485 Terminal Details	
Type	Push-In
Stripping Length	8 mm - 10 mm / 5/16" - 3/8"
Cable Termination	Ferrule with plastic sleeve
2x Conductors Cross Section (Flexible)	0.5 mm <sup>2</sup> / 20 AWG

### RS-485 CABLE WIRING RULES

The following rules must be applied when setting up a RS-485 network:

- Communication wiring must be kept separate from AC power wiring.
- Always route communication cables at least 300mm (12") away from high voltage cables and high-power machines.
- Crossover high power cables at right angles.
- Maximum cable length from Wall Controller / Primary to first cooler is 100m (330ft).
- Maximum cable length between each cooler is 100m (330ft).
- Coolers must be connected in daisy-chain style, not star or multi-drop.

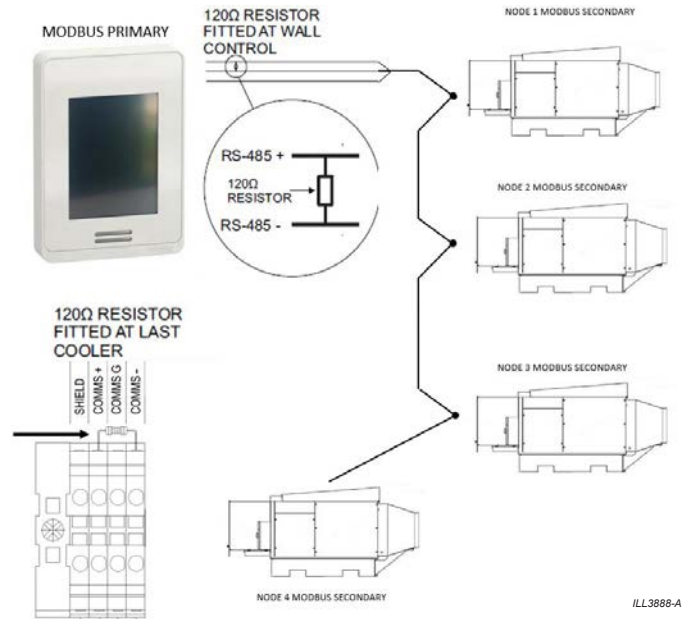
## RS-485 TERMINATING RESISTORS

Daisy-chained RS-485 networks require two 120Ω terminating resistors, one at the start and one at the end of the communication chain.

**Attach a 120Ω terminating resistor between the "+" and "-" terminals on the Primary Controller (e.g. Wall Controller)**

**Attach a 120Ω terminating resistor between the "+" and "-" terminals on the last cooler on the network.**

Do not fit a 120Ω terminating resistor to coolers installed between the Primary Controller and the last cooler.



ILL3888-A

See Appendix A for an example wiring schematic.

## RJ45 ETHERNET SETUP

The BACnet IP (BCN) control option uses the RJ45 ethernet port, located on top of the Multi-Magic PLC.

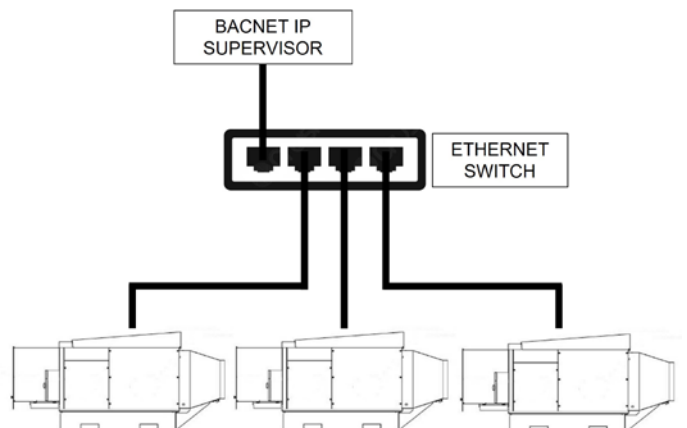
### ETHERNET CABLE SPECIFICATIONS

The Installer must supply ethernet cable between the primary controller and connected coolers to the following specification.

- Cat 5, 5e, 6 or 6e shielded

### ETHERNET CABLE WIRING RULES

- Maximum single cable length between devices is 100m.
- Each cooler has a single RJ45 ethernet port, so an ethernet switch or router is required

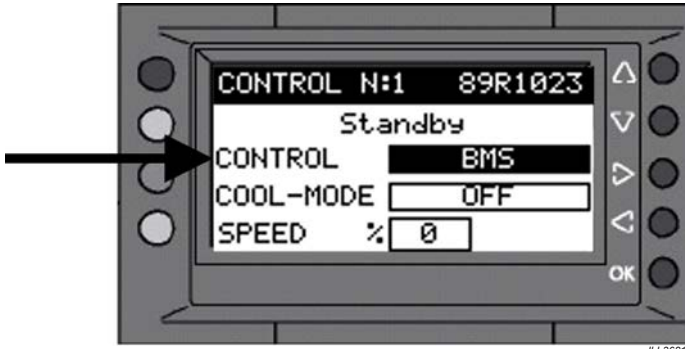


ILL3909-A

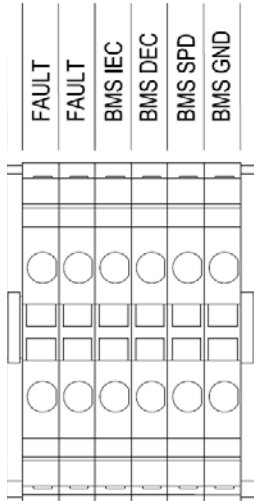
# MULTI-MAGIC CONTROLS

## CONTROL METHOD OPTION 4 (BMS)

### LOW VOLTAGE BUILDING MANAGEMENT SYSTEM



The basic functions of cooler can be controlled via a low voltage Building Management System and the series of terminals located on the control enclosure door. Ensure "BMS" is selected on the CONTROL screen.



ID	TYPE	FUNCTION
FAULT	DIGITAL OUTPUT	Fault Output. Configurable NC or NO. See Settings
FAULT	DRY CONTACT	
BMS GND	GROUND	
BMS SPD	ANALOGUE INPUT 0-10Vdc	Fan Speed Input
BMS IEC	DIGITAL INPUT DRY CONTACT	Cooler Operating Mode. See Logic Table
BMS DEC	DIGITAL INPUT DRY CONTACT	

#### BMS FAULT OUTPUT

The fault output is a pair of dry contact terminals which can be used to switch an external power supply.

Maximum Voltage: 250 Vac

Maximum Current: 3A

Minimum Switching Capacity: 100mA / 5Vdc

The fault output can be configured to be Normally Open (close in Fault state) or Normally Closed (open in Fault state). See the Commissioning Section for instructions on how to set.

The output is available for use in all Primary Control Methods, not just BMS. For example, a Wall Controller can be used for local zone control, with the fault signal monitored by a central building management system.

#### BMS CONTROL INPUTS

The cooler operating mode is set via the IEC, DEC and SPD input terminals with the following logic.

PRIMARY CONTROL METHOD	COOLER FUNCTION	IEC TERMINAL	DEC TERMINAL	SPD (Vdc) TERMINAL
BMS	OFF	FALSE	FALSE	0
BMS	VENT	FALSE	FALSE	>1.3
BMS	INDIRECT COOL ONLY	TRUE	FALSE	>1.3
BMS	DIRECT COOL ONLY*	FALSE	TRUE	>1.3
BMS	INDIRECT & DIRECT COOL	TRUE	TRUE	>1.3
BMS	CLEAR FAULT	FALSE	FALSE	0.9 - 1.3 for 10 seconds
BMS	MANUAL DRAIN	FALSE	FALSE	0.5 - 0.9 for 10 seconds
W/C	VENT FIXED LOW SPEED	TRUE	FALSE	N/A
W/C	VENT FIXED HIGH SPEED	FALSE	TRUE	N/A

**\*Note:** DEC Cool Mode only operates on Supercool coolers

**Warning:** The BMS IEC and DEC input terminals are non-isolated dry contacts. Do not apply an external power supply, instead use a switch to connect the input terminal to the BMS GND terminal.

#### BMS FAN SPEED INPUT

The cooler fan speed is set by applying an analogue 0-10Vdc signal to the Fan Speed Input terminal, with the following logic;

BMS FAN SPEED	MINIMUM VOLTAGE	MAXIMUM VOLTAGE
	Vdc	Vdc
OFF	0.00	1.29
1	1.30	1.79
2	1.80	2.69
3	2.70	3.59
4	3.60	4.49
5	4.50	5.39
6	5.40	6.29
7	6.30	7.19
8	7.20	8.09
9	8.10	8.99
10	9.00	10.00

#### BMS CABLING REQUIREMENTS

To avoid signal degradation use shielded, properly grounded cables for all analogue and digital inputs and outputs. Route input and output cables separately from high voltage power cables. Interconnection wiring shall be separated by reinforced insulation to any live parts.

BMS Terminal Details	
Type	Push-In
Stripping Length	8 mm - 10 mm / 5/16" - 3/8"
Cable Termination	Ferrule with plastic sleeve
2x Conductors Cross Section (Flexible)	0.5 mm <sup>2</sup> / 20 AWG

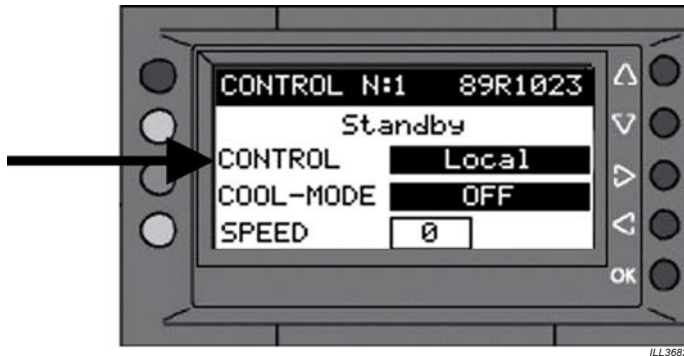
See Appendix B for an example BMS wiring schematic.



# MULTI-MAGIC CONTROLS

## CONTROL METHOD OPTION 5 (LOCAL)

### PLC LOCAL CONTROL



The basic functions of cooler can be manually controlled from the CONTROL screen. This mode is recommended for initial setup and servicing only.

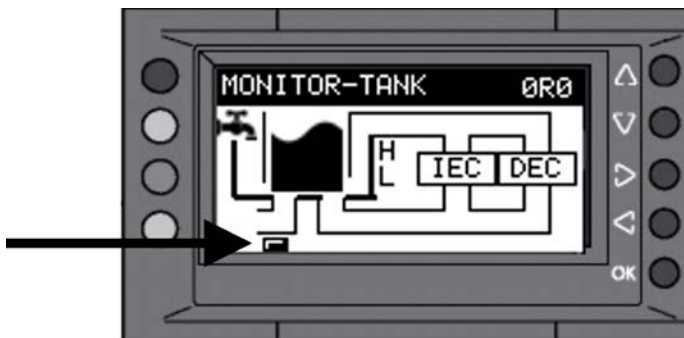
Ensure "LOCAL" is selected on the CONTROL screen.

Select the required COOL-MODE

- Vent = Fan only.
- Indirect = Fan & Indirect Evaporative Cooling
- Direct = Fan & Direct Evaporative Cooling\*
- Supercool = Fan & Indirect & Direct Evaporative Cooling\*.

For all modes, set the SPEED between 0 and 10 to run the fan.

**\*Note:** Direct and Supercool Mode only operates on Supercool coolers.



To start a Manual Drain select the button under the tank icon on the MONITOR-TANK screen.

## MANUAL DRAIN

All control modes provide an option to complete a manual tank drain.

When triggered, the drain valve will open and stay open for at least 10 minutes.

During this period, all pumps will stop and the inlet solenoid valve will remain closed, however the fan will continue to run at the requested speed.

Once triggered, it is not possible to close the drain valve again until the 10 minutes as elapsed.

After 10 minutes the cooler will resume running in requested operating mode.

## FREEZE PROTECTION

When a Multi-Magic Ambient Sensor is installed, the Freeze Protection function is automatically enabled.

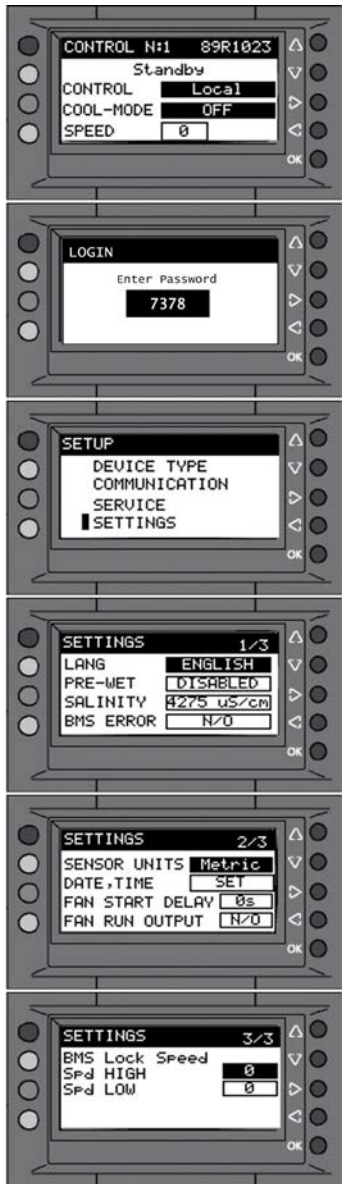
When the ambient temperature is measured below 5oC (41oF) for 20 minutes freeze protection mode is enabled.

Once enabled, the drain valve will open, all pumps will stop and the inlet solenoid valve will remain closed, however the fan will continue to run at the requested speed.

Once the ambient temperature is measured above 5oC (41oF) for 20 minutes freeze protection mode will be deactivated and the cooler will resume running in requested operating mode.

# MULTI-MAGIC CONTROLS

## CHANGING COOLER SETTINGS



Push and hold the RIGHT button until the password screen is displayed.

Use the navigation LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.

Use the navigation UP/DOWN buttons to move the cursor to SETTINGS and push OK.

Use the navigation LEFT/RIGHT buttons to move between Pages 1, 2 and 3.

Use the navigation UP/DOWN buttons to move the cursor to the required setting.

Push OK to activate the field.

Use the navigation UP/DOWN buttons to set a unique value.

Push OK to save the setting

Long press LEFT to return to the previous screen.

SETTING	VALUES
LANGUAGE	English (Default) Spanish Italian French Portuguese
PRE-WET	Enabled Disabled (Default)
SALINITY DRAIN SET POINT	4275 uS/cm (Default) 2305 uS/cm
BMS FAULT STATE OUTPUT LOGIC	Normally Open (Default) Normally Closed
SENSOR UNITS	Metric (Default) Imperial
DATE TIME	Set for use with Fault Codes and Drain History
FAN START DELAY	0s (Default) -120s, -90s, -60s, -30s +30s, +60s, +90s, +120s
FAN RUN OUTPUT LOGIC	Normally Open (Default) Normally Closed
BMS LOCK SPEED	HIGH: 0-10 (Default 0) LOW: 0-10 (Default 0)

## PRE-WET

Upon cooler start-up, Pre-Wet first ensures the water tank is full and then runs an extra 6-minute start up pump cycle to saturate the heat exchanger cores.

During this Pre-Wet phase, the supply fan will be restricted to Speed 1 regardless of controller input.

Pre-Wet ensures only cooled air is delivered, at the expense of a longer start up time.

The Pre-Wet sequence will run again if the pumps have not run in the last 30 minutes.

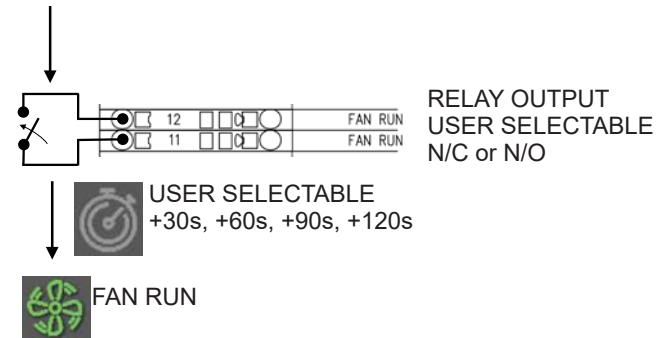
## FAN START DELAY & RUN OUTPUT RELAY

The Fan Start Delay can be a positive or negative timer.

If a positive timer is selected, the fan run output relay changes state but the fan does not start until the timer has expired.

For example, this can be used to open or close 3rd party dampers before the cooler fans start.

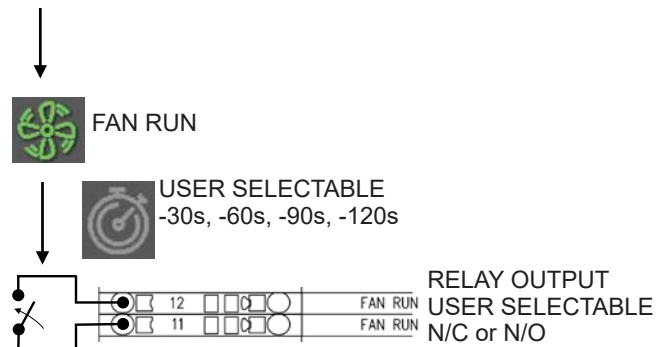
FAN SPEED INPUT



If a negative timer is selected, the fans start when requested, but the fan run output relay does not change state until the timer has expired.

For example, this can be used to ensure internal building pressure is maintained before opening 3rd party relief vents.

FAN SPEED INPUT



The fan run output is a pair of dry contact terminals which can be used to switch an external power supply.

- Maximum Voltage: 250 Vac
- Maximum Current: 3A
- Minimum Switching Capacity: 100mA / 5Vdc

The fan run output can be configured to be Normally Open (close in when fan runs) or Normally Closed (open when fan runs).

The output is available for use in all Primary Control Methods,



# MULTI-MAGIC CONTROLS

## BMS LOCK SPEED

BMS Lock is a special mode for use with a Multi-Magic Wall Controller.

When Wall Controller is selected as the Primary Control Method, use the BMS IEC or DEC input terminals on any connected cooler to remotely lockout the Wall Controller.

When applied, no cooler control from the Wall Controller is possible and the cooler can be configured to either shutdown or run in VENT mode at one of two different fixed speeds

For example, if low speed is set to 3 and high speed is set to 8.

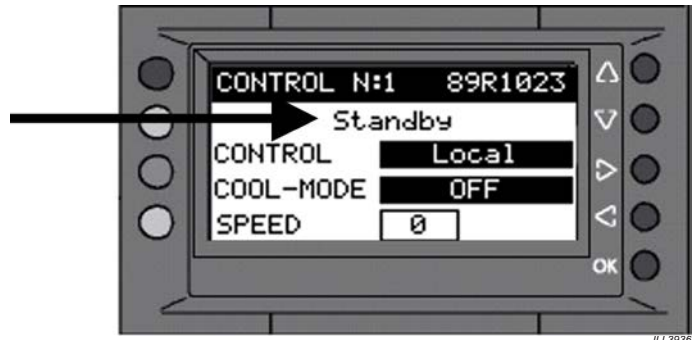
LOW SPEED SETTING (0-10)	HIGH SPEED SETTING (0-10)	IEC TERMINAL	DEC TERMINAL	COOLER FUNCTION
0	0	FALSE	TRUE	SHUTDOWN
0	0	TRUE	FALSE	SHUTDOWN
0	0	TRUE	TRUE	SHUTDOWN
3	8	TRUE	FALSE	VENT SPEED 3
3	8	FALSE	TRUE	VENT SPEED 8

This feature may be useful when Building Managers wish to remotely shutdown coolers during certain hours, enable overnight building purges or when Climate Wizard products are used as blowers for in line heaters during the winter season.

For groups of coolers running from a single Wall Controller

- Each cooler can be set to run at different BMS Lock Speeds.
- The IEC and/or DEC input can be applied to any single cooler in the group and all coolers will enter BMS Lock Mode.

## MESSAGE BAR CONTENTS



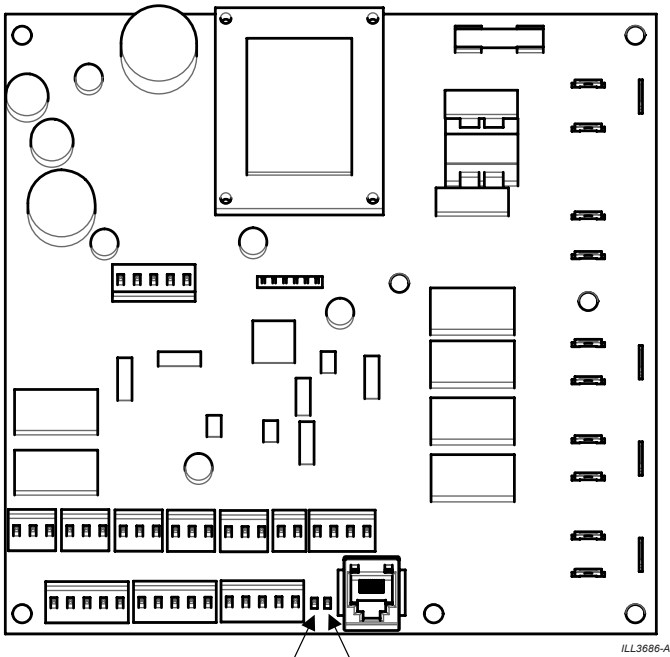
The MESSAGE BAR contains useful information about the current cooler state.

The MESSAGE BAR will cycle through all active messages.

MESSAGE	DESCRIPTION
STANDBY	Cooler is ON but no control input active.
VENT MODE	Fan is running but no cooling stage is on.
TANK INITIAL FILL	Inlet Water Solenoid is on and water is entering the tank. Pumps will not start until the tank is full.
PRE-WET FS LIMITED	Pre-Wet is enabled. The pumps are running for an extra 6 minutes whilst the fan speed is limited.
FAN START DELAY	Fan start delay is enabled. Fans will start after the delay timer has expired.
INDIRECT PUMP RUNNING	IEC COOL MODE IEC pump is running. Pump cycles ON for 60 seconds and OFF for 100 seconds.
CORE DRAIN	IEC COOL MODE IEC pump have just turned OFF and water is returning back to tank.
TANK FILL-IEC	IEC COOL MODE Inlet Water Solenoid is on and water is entering the tank.
TANK LEVEL OK	IEC COOL MODE Tank is full, waiting for IEC pumps to start.
TANK FILL-DEC	DEC COOL MODE Inlet Water Solenoid is on and water is entering the tank.
DIRECT PUMP RUNNING	DEC COOL MODE DEC pump is running. Pump runs continuously.
SALINITY DRAIN	Tank water has reached the maximum salinity level and a partial tank drain and fill cycle is in progress.
CLEAN WATER DRAIN	The chlorinator has not run for 24 hours and a complete tank drain and fill cycle is in progress.
TANK DRAIN	3-day tank drain delay or manual drain triggered.
FREEZE PROTECTION	The tank has drained to prevent water freezing.
REMOTE SHUTDOWN	Multi-Magic Wall Controller has been locked by a BMS input. Refer to Wall Controller manual.
BMS LOCK HIGH SPEED	Multi-Magic Wall Controller has been locked by a BMS input to VENT Mode Refer to Wall Controller manual.
BMS LOCK LOW SPEED	Multi-Magic Wall Controller has been locked by a BMS input to VENT Mode Refer to Wall Controller manual.

# MULTI-MAGIC CONTROLS

## WATER MANAGER LED STATES



ILL3666-A

TRI-COLOUR LED    RED LED

OPERATION PHASE	LED	STATE
INITIAL BOOT UP.	RED	ON
FIRST 30-45 SECONDS AFTER POWER UP	TRI-COLOUR	FLASHING GREEN
NORMAL RUNNING	RED	ON
	TRI-COLOUR	ON AMBER

**Note:** Both PCBA LEDs are continuously ON once communication between the PLC and PCBA has been established.

## FAULT CODE DISPLAY



ILL3980

Active Fault Codes will cause the FAULT button to appear on the CONTROLS page.

Selecting the FAULT button will open the ACTIVE FAULTS page, listing all the current active faults.

Select the INFO button to display a QR code.

Scanning the QR Code will direct users to the Seeley Service Technical Support website.

Select the RESET button to reset each active fault. Cycle the cooler power to reset all active faults.

All faults are added to the FAULT CODE HISTORY screen.

On all screens, long press the LEFT button to return to the CONTROL page.

# MULTI-MAGIC CONTROLS

## FAULT CODE DESCRIPTIONS

All faults below shut the cooler down unless stated.

Fault codes labelled as Running Faults will allow the cooler to continue to run, however performance may be reduced.

FAULT CODE	FAULT DESCRIPTION	SUGGESTED REMEDY
Fault Code 1	<b>PLC – PCBA COMMUNICATION FAILURE</b> Cooler PLC has lost communication with PCBA fitted inside control box for at least 1 minute.	Check LED status on PCBA. Check communication wiring between PLC and PCBA Replace PCBA
Fault Code 2	<b>FAILURE TO DETECT WATER AT LOW PROBE</b> No water at low probe 20 minutes after solenoid valve opening.	Check water supply on. Check solenoid valve open. Check drain valve closed. Check water management probe position relative to drain valve overflow. Clean water management probe.
Fault Code 3	<b>FAILURE TO DETECT WATER AT HIGH PROBE</b> No water at high probe 30 minutes after water detected at low probe.	Check water supply on. Check solenoid valve open. Check water management probe position relative to drain valve overflow. Clean water management probe. Check water supply pressure sufficient to maintain tank capacity.
Fault Code 4	<b>FAILURE TO CLEAR LOW PROBE DURING DRAIN</b> Water still detected at low probe 20 minutes after drain opened.	Check drain valve open. Check drain pipework not blocked. Check solenoid valve closed. Clean water management probe.
Fault Code 5	<b>WATER DETECTED AT HIGH PROBE BUT NOT LOW PROBE</b> Water still detected at high probe 30 minutes after water not detected at low probe.	Clean water management probe.
Fault Code 7	<b>SUPPLY MOTOR ERROR</b> Motor has been in fault state for at least 1 minute.	Check Motor Power Cable connections. Check Motor Communications Cable connections. Check MONITOR screen to identify which motor is in fault.
Fault Code 10	<b>CHLORINATOR FAULT</b> Chlorinator has reached end of life or is experiencing a short circuit. Running Fault	Check cooler PLC flashing LEDs for fault type. Check no debris between chlorinator plates. Replace Chlorinator
Fault Code 11	<b>ROOM AIR SENSOR FAULT</b> Temperature or Relative Humidity input value has been 0V or 10V for at least 10 minutes. Running Fault	Check Sensor values at PLC cooler screen "SENSORS" menu Check Sensor wiring If no Sensor fitted, check Sensor has not been accidentally enabled on Wall Controller and/or PLC
Fault Code 12	<b>AMBIENT AIR SENSOR FAULT</b> Temperature or Relative Humidity input value has been 0V or 10V for at least 10 minutes. Running Fault	Check Sensor values at PLC cooler screen "SENSORS" menu Check Sensor wiring If no Sensor fitted, check Sensor has not been accidentally enabled on Wall Controller and/or PLC
Fault Code 14	<b>DUCT AIR SENSOR FAULT</b> Temperature or Relative Humidity input value has been 0V or 10V for at least 10 minutes. Running Fault	Check Sensor values at PLC cooler screen "SENSORS" menu Check Sensor wiring If no Sensor fitted, check Sensor has not been accidentally enabled the PLC.
Fault Code 15	<b>PRESSURE SENSOR FAULT</b> Pressure input value has been 0V or 10V for at least 10 minutes whilst the fans fan been running. Running Fault.	Check Sensor values at PLC cooler screen "SENSORS" menu Check Sensor wiring If no Sensor fitted, check Sensor has not been accidentally enabled the PLC.
Fault Code 16	<b>COMMUNICATION FAILURE</b> PLC has lost communication with Primary Controller for at least 5 minutes.	For Wall Controller, check communication cable connections including 120Ω Modbus terminating resistors. For BACnet, confirm controller is writing to the BACnet Integrity object at least once every 30 minutes.

# COMMISSIONING

Owner Name: ..... Telephone: .....  
Address: .....  
..... Installer: .....  
Dealer: ..... Model No: .....  
Date Installed: ..... Serial No: .....

## INSTALLATION CHECKLIST

This checklist only covers the key points to be observed during installation. Always refer to the relevant sections of the installation manual for full details.

### COOLER LOCATION

- The cooler is adequately supported, secure and level.
- The cooler is installed in a position that allows adequate access for future maintenance and servicing activities.

### INTAKE AIR

- The cooler will always receive a plentiful supply of fresh air.
- Inlet air filters installed correct way round. Observe airflow direction arrow on filter frame.

### SUPPLY AIR DUCTWORK

- Vibration absorbing flexible connections are used for all duct connections to the cooler.
- All building penetrations are correctly flashed and sealed.
- If flexible ducts are used, they are fully extended, hung correctly, with no kinks, tight bends, or squashed segments.
- All duct joints are fully sealed with no air leaks.

### EXHAUST AIR

- The cooler's exhaust air is not likely to cause corrosion or damage to other nearby items.
- The cooler's exhaust air is not likely to re-circulate into the air intake of the cooler.
- Exhaust caps fitted (CW-H15S PLUS only).
- If exhaust air ductwork is fitted, the static pressure drop does not exceed 20Pa (0.08 in wg).

### ELECTRICAL SUPPLY

- The electrical power supply installation adheres to all local and national regulations
- The electrical power supply is wired back to the distribution board on its own separate circuit.
- A mains isolation switch, with all pole disconnection, has been installed adjacent to the cooler.
- The owner has been instructed how to electrically isolate the unit in case of an emergency
- The Line-Line Voltage (3~) or Line-Neutral (1~) is within the Rating Label specification.
- 440-480V coolers ONLY. Transformer tapping set to match mains voltage.

Record the details

3~ Voltage L1-L2 .....

3~ Voltage L1-L3 .....

3~ Voltage L2-L3 .....

1~ Voltage L-N .....

### WATER SUPPLY

- The water supply installation adheres to all local and national regulations with no leaks at any fittings or valves.
- The water supply pipes were flushed of any foreign materials before connection to the cooler was made.
- The water is filtered as required.
- Static water pressure to each cooler is between 100kPa (15psi) and 800 kPa (115psi)
- Opening and closing the inlet water solenoid valve does not cause water hammer.
- Water flow rate to each cooler is greater than 10L/min (2.6 gal/min) when all coolers are filling.
- Water salinity is greater than 100uS/cm.
- An isolation valve has been installed adjacent to the cooler.
- The owner has been instructed on how to isolate the water supply to the cooler in case of emergency.

Record the details

Water Pressure .....

Water Salinity .....

### WATER DRAIN

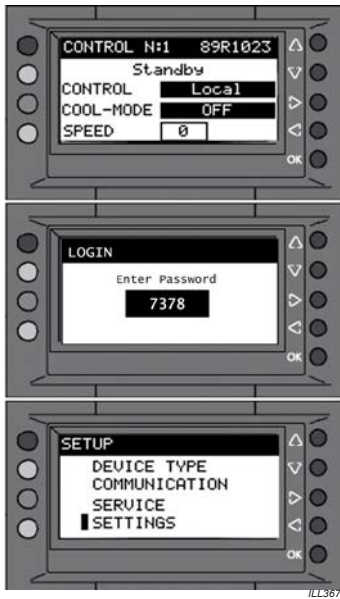
- The water drain installation adheres to all local and national regulations with no leaks at any fittings or valves.
- Drain water pipes/hoses are free from any restrictions (kinks) or blockages.
- The drain water does not discharge onto the roof surface.

Signed by Installer: .....

Commissioning Technician: .....

# COMMISSIONING

## SETUP MENU ACCESS

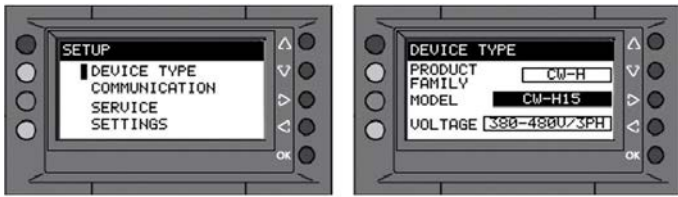


Push and hold the RIGHT button until the password screen is displayed.

Use the navigation LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.

## MULTI-MAGIC DEVICE TYPE

Prior to running the cooler for the first time, check the device type in the PLC SETUP menu matches the cooler rating label.



Record the details

Product Family. ....  
 Model .....  
 Voltage .....

**IMPORTANT:** CW-H Supercool coolers are sold as one part number, but can be configured in one of two ways, CW-H15S or CW-H15S PLUS. Refer to the specifying consultants/builders schedule of works or specification to confirm which configuration is to be used.

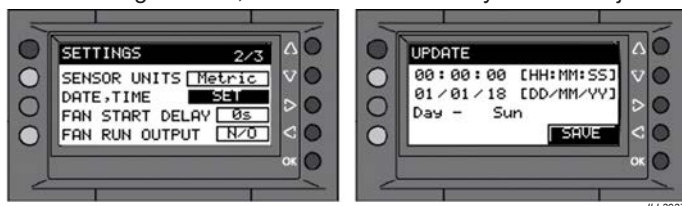
## TIME & DATE

To assist with fault code and drain history logs, set the time and date in the PLC SETTING menu.

Use the navigation LEFT/RIGHT and UP/DOWN buttons to set the Time, Date and Day.

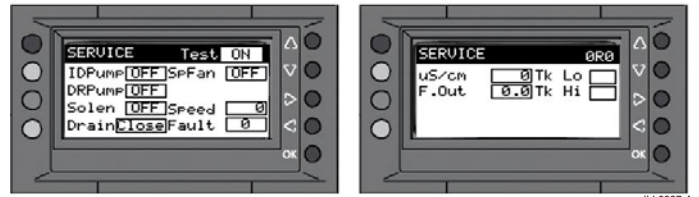
Select SAVE to commit values to memory.

Note: If using BACnet, Time & Date are set by BACnet objects.



Signed by Installer: .....

## TEST MENU



To assist with commissioning, each component on the cooler can be controlled individually via the SERVICE - TEST MENU on the cooler PLC.

Set TEST to ON to control components.

Use the LEFT/RIGHT buttons to access 2 pages.

## WATER MANAGEMENT SYSTEM CHECKS

Turn inlet water solenoid valve ON.

- Confirm water enters reservoir.
- Wait until Tank Low Level (Tk Lo) probe changes state.
- Confirm Water Salinity reading is greater than 100 uS/cm.
- Confirm Chlorinator is fully submerged at low water level.
- Wait until Tank High Level (Tk Hi) probe changes state.
- Turn inlet water solenoid valve OFF.

## HEAT EXCHANGER FLUSH

To reduce the probability of unusual odours, foaming or water pull off, it is recommended to flush new heat exchangers with fresh water and then drain the reservoir.

Turn Direct Pump (DRPump) ON (Supercool Coolers only).

- Confirm Direct Pump starts.
- Run for 5 minutes to flush the Direct Heat Exchangers.
- Turn Direct Pump (DRPump) OFF.

Turn Indirect Pumps (IDPump) ON.

- Confirm both Indirect Pumps start.
- Run for 5 minutes to flush the Indirect Heat Exchangers.
- Turn Indirect Pumps (IDPump) OFF.

Set Drain to OPEN.

- Confirm the drain valve opens.
- Confirm water fully drains from the reservoir.

## SUPPLY FAN CHECKS

Set Supply Fan (SpFAN) to ON.

Set Speed initially to 1 and then progressively increase to 10.

- Check for unusual or excessive sound output at various fan speeds.
- Check for excessive vibration and/or rattle sounds.

Commissioning Technician: .....



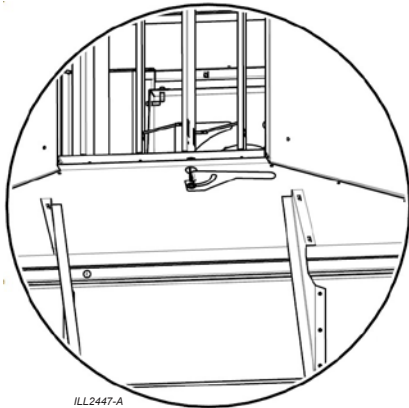
# COMMISSIONING

## AIR FLOW BALANCING

In order for the cooler to produce cool air it is mandatory that some of the inlet air is forced to return through the indirect heat exchanger cores and be exhausted to atmosphere. Therefore only a proportion of the total inlet air is delivered into the cooled zone.

### THIS PROPORTION IS CRITICAL TO ACHIEVING SATISFACTORY PERFORMANCE.

The supply air transition is equipped with a damper that can be adjusted to 'balance' the proportion of supply and exhaust air streams. Damper position is controlled through a lever with locking screw located underneath the supply air transition. The damper will need to be adjusted during commissioning depending on the external static pressure of the duct system.



ILL2447-A

There is a hole in the right hand side of the supply air transition suitable for manometer tubes for measuring pressure.

**NOTE!** Pressure measuring should be carried out using an accurate instrument, either electronic or "inclined tube manometer". **DO NOT GUESS.**



To balance the air flow.

1. Ensure all side panels and air filters are in place.
2. Connect all external supply and exhaust ductwork.
  - a. Stand-alone Cooling: Fully open all supply air outlets in the entire ductwork system.
  - b. Pre-Cooling: Ensure all main Air Conditioning plant fans are running at full speed - consult with Building Manager and/or Air Conditioning contractor.
3. Using the cooler's PLC, start the Climate Wizard in LOCAL and IEC modes at Speed 10.



ILL3884-A

4. Wait approximately 5 minutes, to allow the cooler to complete the first water fill and the pumps to start.
5. Adjust the supply air transition damper until the pressure in the transition stabilises as follows:
  - a.CW-H10: 200 Pa (0.80 in wg static)
  - b.CW-H15: 175 Pa (0.70 in wg static)
  - c.CW-H15S: 175 Pa (0.70 in wg static)
  - d.CW-H15S Plus: 210 Pa (0.84 in wg static)
6. For multiple CW-H coolers connected to the same supply duct, it may be necessary to re-check and adjust the supply air transition pressures of all coolers after each cooler is set.
7. For stand-alone cooling, balance all customer's supply air outlets in your usual manner. After balancing, check and adjust the CW-H damper back to the above values.
8. Lock the damper in its final position and record the final value.

**Supply Transition Pressure = .....**

Signed by Installer: .....

Commissioning Technician: .....

# COMMISSIONING

## MULTI-MAGIC COOLER SETTINGS

To aid future servicing it is recommended to record the PLC setting here.

SETTING	VALUES
PRIMARY CONTROL METHOD	<input type="checkbox"/> Local (LCL) <input type="checkbox"/> Wall Controller (W/C) <input type="checkbox"/> Low Voltage BMS (BMS) <input type="checkbox"/> High Level Modbus (MBS) <input type="checkbox"/> BACnet (BCN)
LANGUAGE	<input type="checkbox"/> English (Default) <input type="checkbox"/> Spanish <input type="checkbox"/> Italian <input type="checkbox"/> French <input type="checkbox"/> Portuguese
PRE-WET	<input type="checkbox"/> Enabled <input type="checkbox"/> Disabled (Default)
SALINITY DRAIN SET-POINT	<input type="checkbox"/> 4275 uS/cm (Default) <input type="checkbox"/> 2305 uS/cm
BMS FAULT OUTPUT LOGIC	<input type="checkbox"/> Normally Open (Default) <input type="checkbox"/> Normally Closed
SENSOR UNITS	<input type="checkbox"/> Metric (Default) <input type="checkbox"/> Imperial
FAN START DELAY	<input type="checkbox"/> 0s (Default) <input type="checkbox"/> -120s <input type="checkbox"/> -90s <input type="checkbox"/> -60s <input type="checkbox"/> -30s <input type="checkbox"/> +30s <input type="checkbox"/> +60s <input type="checkbox"/> +90s <input type="checkbox"/> +120s
FAN RUN OUTPUT LOGIC	<input type="checkbox"/> Normally Open (Default) <input type="checkbox"/> Normally Closed
BMS LOCK SPEED (0-10)	<input type="checkbox"/> HIGH = _____ <input type="checkbox"/> LOW = _____

## MULTI-MAGIC RS-485 SETTINGS

If used, record the PLC settings for Wall Controller, Modbus and BACnet MS/TP communication here.

SETTING	VALUES
NAME*	<input type="checkbox"/> Default = Cooler 1 <input type="checkbox"/> Actual = _____
Unique NODE ADDRESS (1...99)	<input type="checkbox"/> Default = 1 <input type="checkbox"/> Actual = _____
BAUD RATE	<input type="checkbox"/> 9600 <input type="checkbox"/> 19200 <input type="checkbox"/> 38400 (Default) <input type="checkbox"/> 57000 <input type="checkbox"/> 76800 <input type="checkbox"/> 115200
PARITY	<input type="checkbox"/> NULL (Default) <input type="checkbox"/> ODD <input type="checkbox"/> EVEN
120Ω TERMINATING RESISTORS	<input type="checkbox"/> Wall Controller / Primary <input type="checkbox"/> Last Cooler

\* Applicable to BACNet MS/TP only

## MULTI-MAGIC IP SETTINGS

If used, record the PLC settings BACnet IP communication here.

SETTING	VALUES
IP ADDRESS	<input type="checkbox"/> Default = 192.168.10.51 <input type="checkbox"/> Actual = _____
GATEWAY	<input type="checkbox"/> Default = 192.168.10.1 <input type="checkbox"/> Actual = _____
SUBNET MASK	<input type="checkbox"/> Default = 255.255.255.0 <input type="checkbox"/> Actual = _____
BACNET IP PORT	<input type="checkbox"/> Default = 47808 (0xBAC0) <input type="checkbox"/> Actual = _____

## CUSTOMER HANDOVER CHECKLIST

Run the cooler for at least 20 minutes in IEC and DEC mode at Speed 10 and confirm,

- Leaving temperatures are sufficiently cooler than ambient temperatures.
- No unusual odours.
- No visible water leaks.
- No excess water is draining from overflow.

Finally, confirm that

- All the installation rubbish has been removed.
- Any property damage reported and/or repaired.
- The customer has been given a copy of the cooler manual which includes Operation, Maintenance & Warranty details.

Signed by Installer: .....

Commissioning Technician: .....

# MAINTENANCE SCHEDULE

## MAINTENANCE FREQUENCY

Maintenance of an indirect evaporative cooler is essential in maintaining proper performance and reliability.

All maintenance must be done by competent, qualified, licensed technicians, in accordance with National and/or Local Regulations.

The frequency of service is largely dependent on the conditions under which the cooler is operated. External factors, such as air and water quality, can affect the serviceable life of the cooler and its components. In particular, installations using hard water, usually defined as greater than 200mg/L, will experience greater scaling problems requiring a more frequent cleaning regime.

Similarly, the amount and type of use can also have a significant impact. The guidelines listed below are intended to provide help in formulating a proper service regime. Local, and in some cases, individual factors should be taken into account when deciding on the frequency of visits.

**HEALTH REGULATIONS.** In some regions, regulations require that evaporative air coolers be serviced at specific intervals. Ensure all maintenance is done in accordance with any local and national regulations.

TYPE OF INSTALLATION	MAINTENANCE SCHEDULE SERVICING FREQUENCY	AIR FILTERS	CHLORINATOR
COMMERCIAL / INDUSTRIAL INSTALLATIONS (Seasonal use)	Maintenance Schedule servicing must be a minimum of twice a year, typically immediately before and after the summer season.	Air filters should be cleaned every month of operation and replaced every year.	Chlorinators should be cleaned during each service and replaced every 4 years.
COMMERCIAL / INDUSTRIAL INSTALLATIONS (All year use)	Maintenance Schedule servicing must be performed every 3 months.	Air filters should be cleaned every month and replaced every year.	Chlorinators must be cleaned during each service and replaced every 2 years.

While installation is not covered by warranty (e.g. duct work, roof penetrations, electrical and water connections etc.), these items should be checked as they can affect the performance (and/or safety) of the cooler. For this reason, they are included in the Maintenance Schedule.

For access to Technical/Installation/Service Information register online at [www.seeleyinternational.com/service](http://www.seeleyinternational.com/service)

## WINTER OPERATION AND SHUTDOWN

Climate Wizard coolers cannot be used in any cooling mode (INDIRECT, DIRECT or SUPERCOOL) in freezing conditions. In particular the inlet water solenoid valve, pumps, and drain valve are likely to fail in such conditions.

It is recommended that, to prevent damage to cooler components, the following tasks are completed before the start of the winter season.

1. Drain and clean the reservoir.
2. Drain down and isolate the water supply.
3. Isolate the power.

For installations requiring continuous operation through the winter, it is possible to run the cooler in VENT mode down to -20°C (-4°F), however customers must ensure the controls are not accidentally set to any cooling mode in these conditions.

Coolers fitted a Multi-Magic Ambient Sensor will automatically enable freeze protection. See page 27 for full details.

# MAINTENANCE SCHEDULE

## MAINTENANCE CHECKLIST

### DEFINITIONS

Clean - To wash and remove all dirt, grit or debris.

Check/Inspect - To visually inspect the item for correct operation, fitment and functionality.

Test - To turn the item on and off and confirm correct function.

Replace - To remove the existing item and replace with a specified genuine replacement part.

**Note!** It is important that only new Seeley International factory authorised replacement parts be used in this cooler. Failure to do so may void warranty, cause improper cooler performance, and unsafe operation.

SERVICE NO.	1	2	3	4	5	6	7	8	9	10	11	12
<b>EXTERNAL INSPECTION</b>												
Check/Inspect the following parts for general deterioration, leaks, damage, corrosion, missing components, secure connections, and function.												
Cooler Body												
Supply Air Duct												
Support Frames / Curb												
Vibration Isolation												
Roof Flashing												
Isolation Switch												
Circuit Breakers/Fuses												
Power Cables												
Communication Cables												
Water Supply Pipe												
Water Supply Strainer/Filter												
Water Isolation Valve												
Drain Hose												
Remove & Clean the following components.												
Air Filters*												

<b>INTERNAL WATER DISTRIBUTION</b>												
Check/Inspect the following for general condition, damage and secure connections.												
Water Distribution Hoses												
Remove & Clean the following components												
Pump Strainers												
Water Probe Pins												
Chlorinator Cell*												
Tank Surfaces												
Test the following components												
Water Probe Resistance												
<b>HEAT EXCHANGERS</b>												
Remove & Clean the following components												
Indirect Spreaders												

<b>FAN &amp; MOTORS</b>												
Check/Inspect the following for general condition and damage.												
Supply Fan Blades												
Supply Motor Mounts												
Test the following.												
Supply Motor Spins Freely												

\* Air Filters and Chlorinators require replacement based on usage. Refer to frequency of service guidelines.

# MAINTENANCE SCHEDULE

SERVICE NO.	1	2	3	4	5	6	7	8	9	10	11	12
<b>FUNCTIONAL TEST</b>												
Test the following components service screen.												
Inlet Solenoid Valve												
3-Pin Water Probe												
Drain Valve												
Indirect Pump												
Direct Pump												
Supply Fan Speed Control												
Check/Inspect the following whilst running at full speed.												
No excessive noise												
No excessive vibration												
No water leaks												
Correct internal water levels												



# MAINTENANCE INSTRUCTIONS

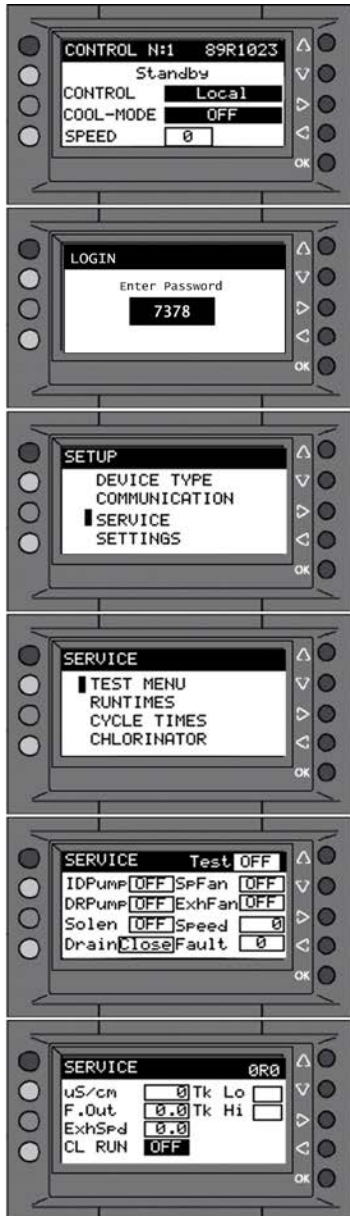
## COOLER CONTROL

Liaise with the Building Manager prior to starting a service.

To avoid any unintended cooler operation from commands received by remote controller, it is recommended that the cooler is set to LOCAL control before performing any maintenance.



To assist with maintenance and fault finding, each component of the cooler can be controlled individually via the TEST MENU on the cooler PLC.



ILL3682

- Push and hold the RIGHT button until the password screen is displayed.
- Use the LEFT/RIGHT and UP/DOWN buttons to enter password "7378" and push OK to display the SETUP screen.
- Use the UP/DOWN buttons to move the cursor to SERVICE and push OK.
- Use the UP/DOWN buttons to move the cursor to TEST MENU and push OK.
- Set TEST = ON  
Use the UP/DOWN buttons to move the cursor between component and push OK to change state.
- Use the LEFT/RIGHT buttons to switch between different Test Menu screens.
- Push and hold the LEFT button to return to the previous menu. Repeat until the display returns to the "CONTROL" menu.

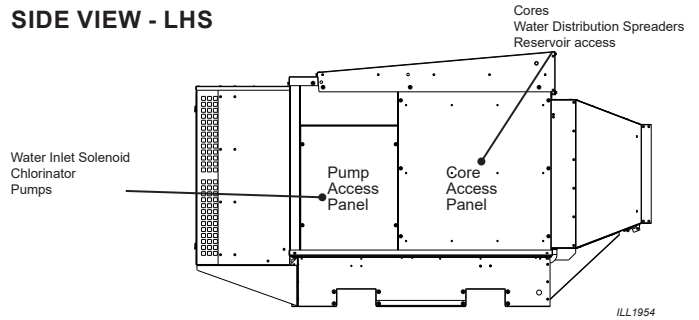
ILL3913

**IMPORTANT: UPON COMPLETION OF SERVICE ENSURE PLC CONTROL IS SET BACK TO ORIGINAL SETTING (WALL CONTROLLER, MODBUS, BMS, OR BACNET)**

## QUARTERLY INSPECTION PROCEDURES

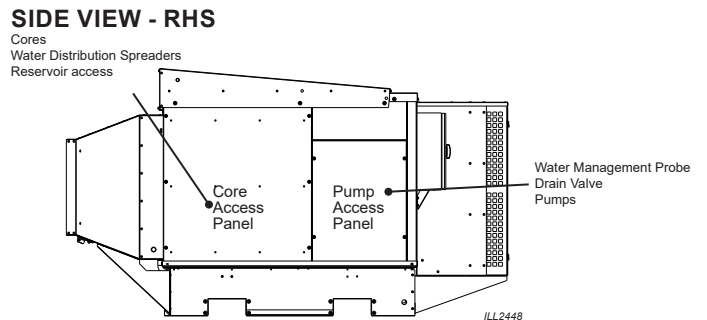
1. Drain the cooler reservoir by initiating a manual drain
2. Isolate and lockout the power supply to the cooler.
3. Turn off the water supply.
4. Remove the service access panels from both sides of the cooler.
5. Clean the Pump Strainers & Impellers.
6. Clean the Chlorinator Blades.
7. Clean the Water Management Probe.
8. Clean the Water Reservoir.
9. Clean or Replace the Inlet Air Filters.
10. Inspect the entirety of the cooler body and external components for general deterioration, leaks, damage, corrosion, and loose or missing fasteners.
11. Re-fit the service access panel to both sides of the cooler. Apply a liberal coat of anti-seize paste to the screw threads prior to fitment.
12. Turn on the power and water supply.
13. Complete the cooler commissioning sequence.

### SIDE VIEW - LHS



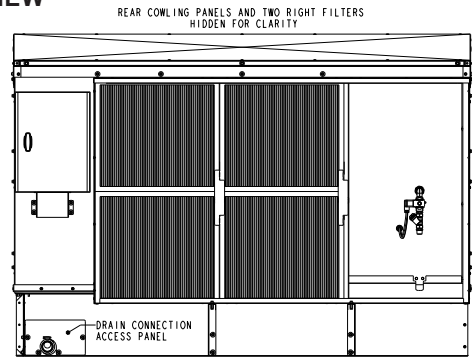
ILL1954

### SIDE VIEW - RHS



ILL2448

### REAR VIEW

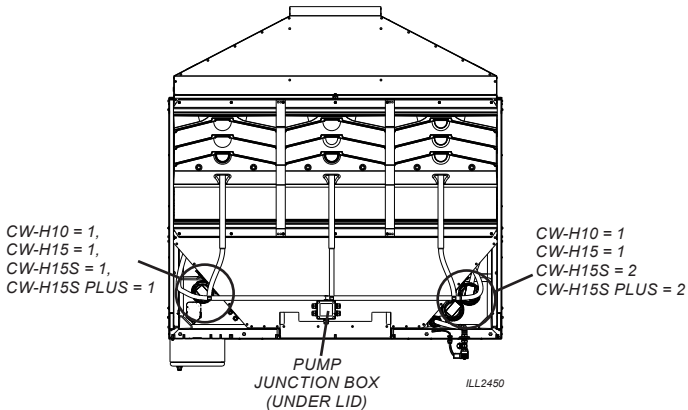


ILL3683

# MAINTENANCE INSTRUCTIONS

## INDIRECT & DIRECT PUMPS

Quantities and locations of pumps for each model are shown below.



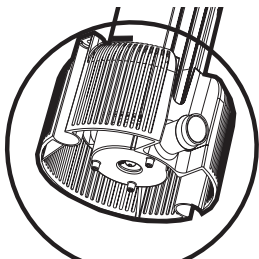
### PUMP MAINTENANCE

#### Cleaning Pump Strainers & Impellers

1. Cut the cable tie securing the pump leads and remove the 2 screws securing the pump bracket to the wall of the cooler.
2. Disconnect the plumbing hose from the spigot at the pump base.
3. Remove the pump assembly from the cooler cabinet.
4. To remove pump from the strainer, press the release button on the strainer, twist the pump body clock-wise with button depressed and lift the pump body out of the strainer base. Note the orientation prior to removal.
5. Inspect and clean the pump strainer and impellor housing. Remove any solids or residues from the strainer slots or around the impellor with a soft brush.
6. Re-assemble in the reverse order, use a new cable tie to tidy and secure all the cables again.

**Note!** When removing or unplugging pumps, take care to ensure they are replaced correctly.

- The pump body must be seated flush in outlet housing otherwise it will not pump sufficient water.
- Check the integrity of the hoses and their connection to the pump spigots.



### PUMP REPLACEMENT

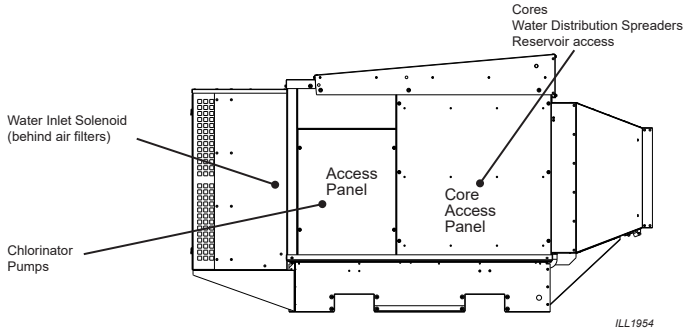
Pumps are wired in parallel via a junction box located below the cooler lid back panel.

Trace the pump cable back to the pump junction box to identify the correct cable gland and terminal junctions.

Replicate the pump basket orientation with the pump being removed.

Unscrew the 2 screws securing the pump to the bracket and refit to the new pump.

## WATER INLET SOLENOID VALVE



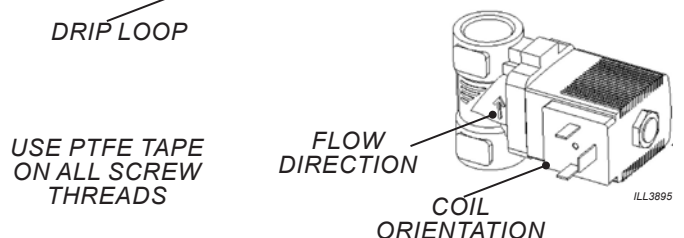
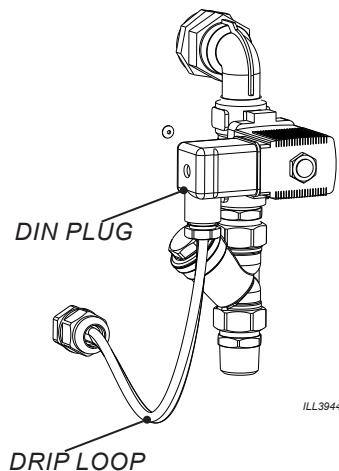
### SOLENOID VALVE STRAINER MAINTENANCE

To clean the inlet water strainer,

1. Turn off the water supply.
2. Unscrew the centre cap and remove the internal mesh.
3. Inspect and clean the mesh, removing any internal solids or residue.
4. If required, replacement meshes should be at least 500 micron.

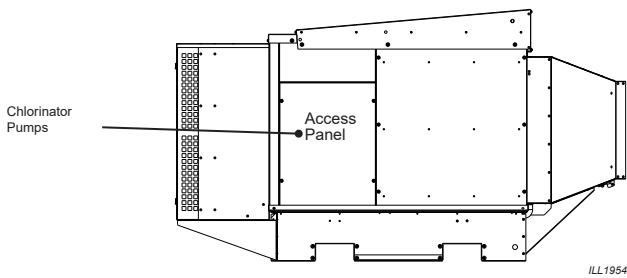
### SOLENOID VALVE REPLACEMENT

5. Turn off the water supply and detach the water supply pipe from the cooler.
6. Unscrew the cable DIN plug connector and detach from the solenoid coil.
7. Open the side access panel and locate the water inlet backnut.
8. Rotate the entire inlet valve assembly and unscrew from the cooler.
9. Unscrew the old valve from the assembly.
10. Fit the new solenoid, ensuring PTFE tape is used on the screw threads, the correct flow orientation is set, and that the solenoid coil is facing the correct direction.
11. Install the valve assembly back onto the cooler.
12. Re-fit the cable DIN plug ensuring the gasket is correctly seated and the cable forms a natural drip loop. Secure the DIN plug with the screw.



# MAINTENANCE INSTRUCTIONS

## CHLORINATOR

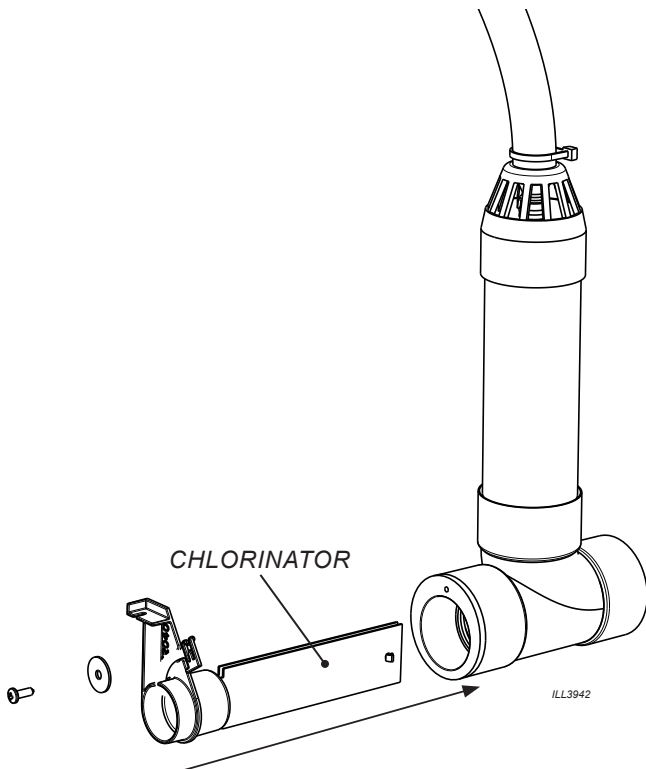


### CHLORINATOR MAINTENANCE

The chlorinator is fitted inside a PVC tee-piece located at the bottom of the inlet water downpipe. To remove, detach the downpipe from the flexible hose and unscrew the screw holding the chlorinator in place.

It is normal for the chlorinator cell blades to be covered in white deposits.

1. Remove any excess solids gently, using a soft brush. Take care not to scratch the chlorinator blade surfaces.
2. Wash or hose the chlorinator cell in clean water (hot water if possible).
3. Immerse the chlorinator cell in a plastic container with 5% phosphoric acid solution for at least 10 minutes. Be sure to clean the inner surfaces of the chlorinator cell blades and rinse with fresh water.
4. Check that the chlorinator spacing clip, located at the end of the blades, is in place.
5. Refit the chlorinator inside the downpipe in the upright position and secure with the provided screw and washer.

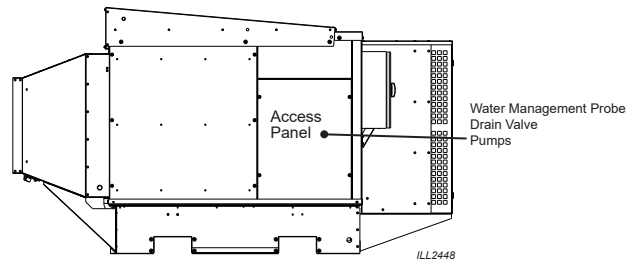


### CHLORINATOR REPLACEMENT

Unplug the chlorinator lead from the main control board, (refer to the wiring diagram on the control box door for the plug point location), remove the cable from the cable gland at the base of the control box and pull through the rubber gland mounted below the control box. Use the old cable to pull the new cable to the opposite side of the cooler.

## WATER MANAGEMENT PROBE

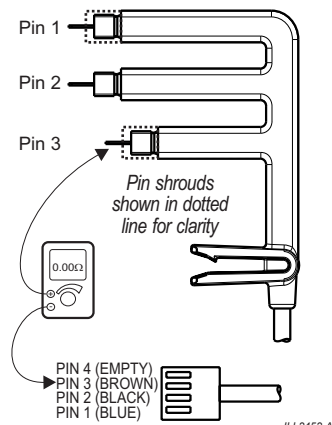
### SIDE VIEW - RHS



### WATER MANAGEMENT PROBE MAINTENANCE

1. Open the pump access panel. Cut the cable tie securing the probe lead to the pump hose.
2. Unclip the probe from the bracket, pull the lead through the opening in the bracket and pull the probe out from the enclosure (there is sufficient lead length to clear the pump enclosure). Remove the small plastic shrouds from the first and third pins.
3. Clean the pins by wiping the contact surfaces with a soft cloth - do NOT use abrasives.
4. Check the probe pin resistances using a multi-meter (refer figure and wiring diagram - you'll need to unplug the probe lead from the main PCB to do this).

Clean the water level probes by wiping the contact surfaces with a soft cloth.



Resistance should be 0-5 ohms. A reading of 5 ohms or greater indicates a faulty probe. Check for shorts between pins: There should be an open circuit.

5. Refit the shrouds over pins 1 & 3. Refit the probe to the bracket, making sure the clip is fully engaged and square (the clip makes a "click" sound when properly engaged).

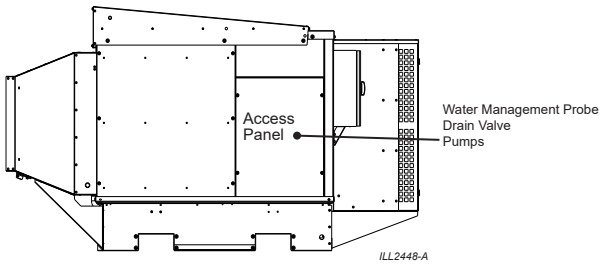
### WATER MANAGEMENT PROBE REPLACEMENT

1. Unclip the probe from the mounting bracket, unplug the probe lead from the main PCB, remove the lead from the cable gland at the base of the control box, pull the lead through the rubber gland mounted below the control box from the access panel opening.
2. Refit the assembly. Use a new cable tie to tidy and secure all the cables again and re-assemble.

# MAINTENANCE INSTRUCTIONS

## DRAIN VALVE

### SIDE VIEW - RHS

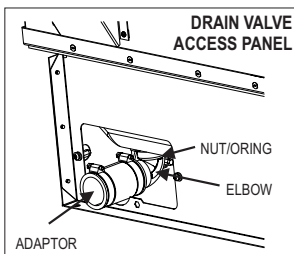
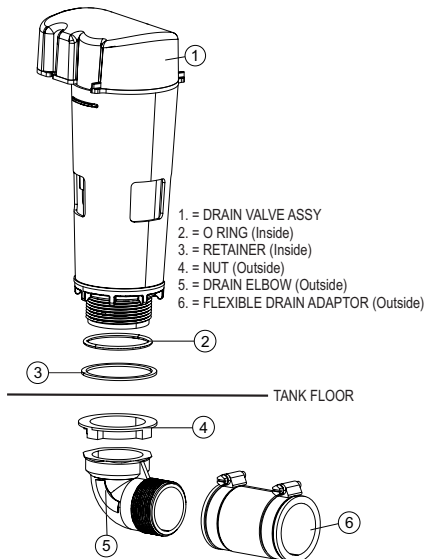


### DRAIN VALVE MAINTENANCE

No regular maintenance of the drain valve is required; however it is sometimes necessary to remove the drain valve fully during tank flushing.

### DRAIN VALVE REPLACEMENT

1. Unplug the drain valve lead from the main PCBA, (refer to the wiring diagram on the control box door for the plug point location), remove the lead from the cable gland at the base of the control box and pull through the rubber gland mounted below the control box.
2. Remove any drain fittings from the bottom of the Drain Valve.
3. Undo the drain valve nut on the bottom of the reservoir and lift the drain valve out of the cooler.
4. Before replacing, ensure the sealing surface of the reservoir and the o-ring is free of any debris. This is important to prevent leaks.
5. Make sure that the O-Ring (2) and Retainer (3) is fitted to the drain valve thread before replacing the valve back into the reservoir. Screw the nut (4) up tightly by hand through the drain valve access panel. **Do not overtighten the nut.**
6. Re-fit the drain fittings to the bottom of the Drain Valve.
7. Run the new drain valve cable through to the control box and connect to the PCBA.



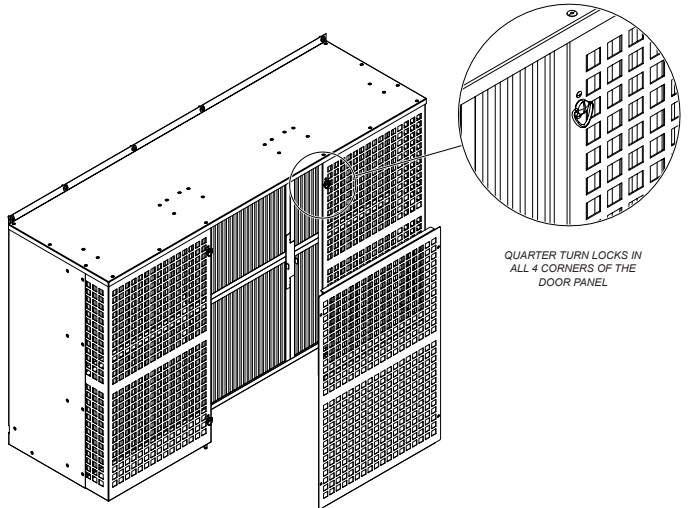
ILL2453-C

## INLET AIR FILTERS

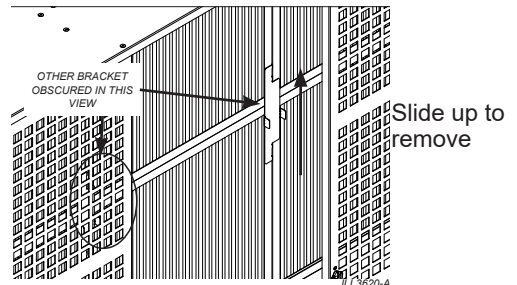
The inlet air filters should be replaced as soon as the airflow through the filters is restricted by dust or contaminants. The frequency of changing the inlet air filters is dependent on the air quality at the site.

Replacement inlet air filters are available from SI Service Agents and Climate Wizard Distributors. If alternative air filters are supplied, they should be to EN779 G4 or ASHRAE 52.2 MERV8 standards as a minimum.

To access the Inlet Air Filters, the centre front panel of the Air Filter Cowling must be removed by releasing x4 quarter-turn fasteners.



Lift and slide out the 2x retaining brackets holding the filters in place.



The Inlet Air Filters slide in and out of the Air Filter Frame. When fitting, use the air flow direction sticker on the side of the filter to ensure the correct orientation.

Ensure the 2x retaining brackets are re-fitted.

## WATER RESERVOIR (TANK)

Flushing of the water reservoir is best achieved with the pumps/chlorinator and water management probe removed. In instances of large amounts of solid debris, it is also recommended to remove the drain valve.

Use a water hose or low-pressure cleaner to flush all debris down the reservoir drain. After flushing wipe the bottom of the reservoir thoroughly using a wet cloth or brush.



# MAINTENANCE INSTRUCTIONS

## INDIRECT HEAT EXCHANGERS

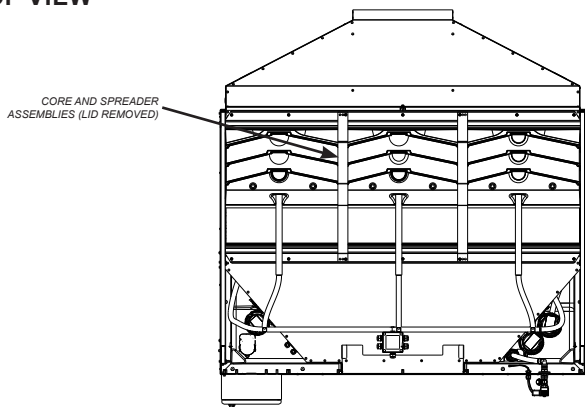
The indirect heat exchanger cores do not require any maintenance other than visual inspection, which can be completed without removal from the cooler.

However it is recommended that, after 7 years of operation and for each subsequent year of operation, all indirect heat exchangers are removed for a detailed inspection.

During a full inspection, check the following areas.

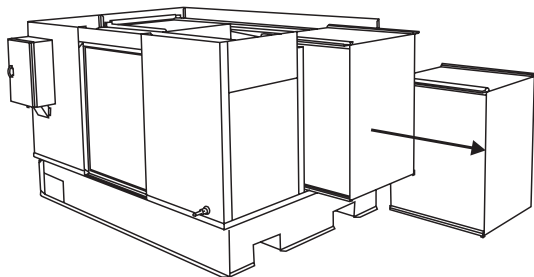
- Air intake face and dry channels are clear of dirt, debris and calcium build up.
- Glue seams are fully sealed, with no splits greater than 10cm.
- Wet channel air-entry slots are not bridged by calcium build up.

### TOP VIEW



ILL2450

1. Power OFF, water OFF.
2. Disconnect and remove any fixed ducting from the exhaust outlet of the cooler (if fitted).
3. Remove the exhaust transition/lid assembly from the cooler.

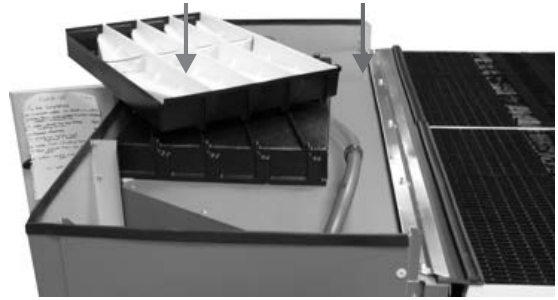


ILL2462-A

4. Open the core access panels on either side of the cooler.
5. Remove the metal core clamp strips
6. Disconnect the spreader assembly from the rubber core extrusions and remove the water spreader assemblies. They can be placed aside onto the lid of the cooler cabinet while still remaining connected to the plumbing system.



ILL2456-A

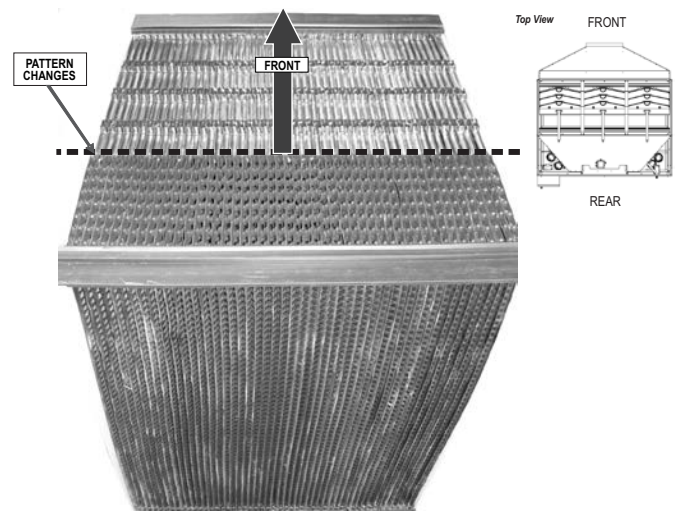
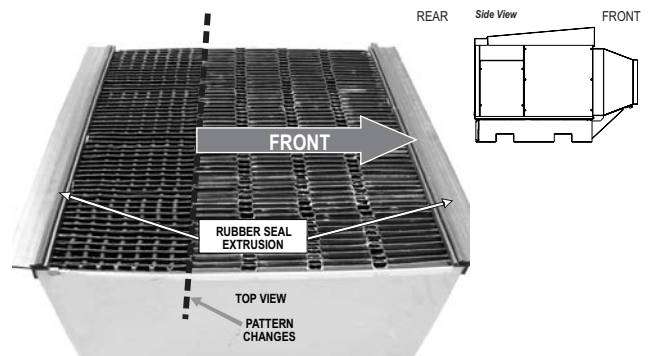


7. The cores can now be slid out from either side of the cooler through the access panel openings. Take care to ensure the cores are not damaged during removal. They can be heavy and fragile when wet. Grasp the cores around the top section to ensure no delamination of the core occurs while moving them.



ILL2457-A

8. To re-assemble, position the cores into the cooler starting at the centre. For all cores the front of the core must face the cooled air outlet of the cooler as below.

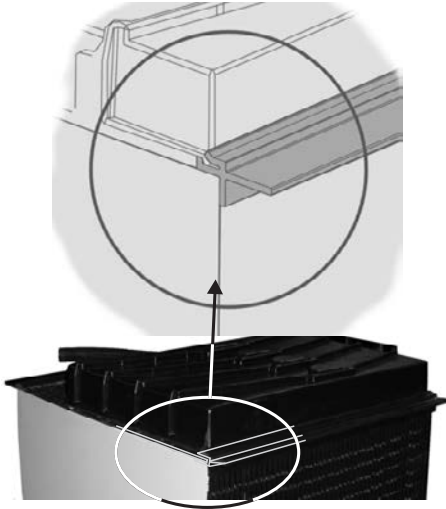


ILL2458-A



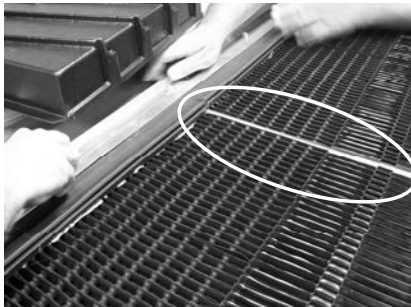
# MAINTENANCE INSTRUCTIONS

9. Locate the water spreader assembly front flange into the extrusion at top front of the cores.



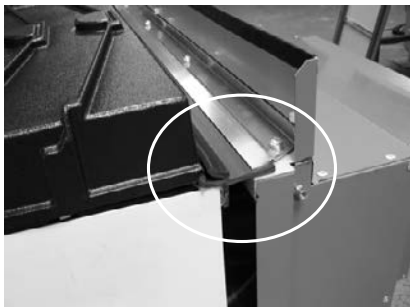
ILL2459-A

10. Check the cores fit snugly and squarely across the width of the core platform and are firmly butted together. Check for a uniform gap at either side of the cooler between the side walls and the core. The core access door has a seal to take up any resultant gap.



ILL2460-A

11. Ensure a good seal between the cores and the access door when closing. When re-securing the access doors, start from the bottom screws and work up.
12. Refit the core clamp strips clamping over the extrusion located at the top of the cores.

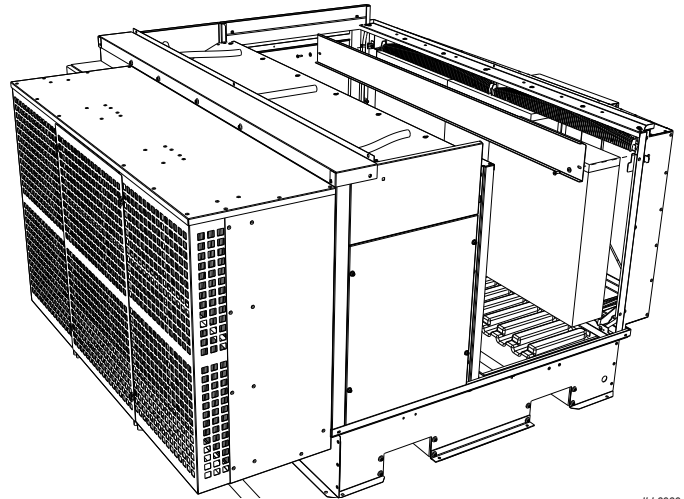


ILL2461-A

13. Refit the exhaust transition/lid assembly to the cooler.
14. Refit any fixed ducting to the exhaust outlet of the cooler.
15. Turn water and power back on to the cooler.

## DIRECT HEAT EXCHANGERS (CHILLCEL) (CW-H15S, H15S Plus ONLY)

1. Remove the lid / exhaust assembly.
2. Remove the indirect heat exchangers to expose the 3 Chillcel pads located in the cooler supply air outlet transition.
3. Remove the Chillcel cover plate.
4. Slide the Chillcell out from underneath the water spreader assembly.



ILL3939

5. To re-assemble, first note the Chillcel has a small header block; this is the top of the pad and must be positioned under the water spreader for the pad to function correctly.
6. Ensure the re-fitted Chillcel sits upright against the water spreaders and tightly against each other.

## ELECTRICAL ENCLOSURE

The cooler electrical controls enclosure is manufactured from steel coated in a thermosetting epoxy polyester powder paint. Care should be taken to avoid causing deep scratches, dents or cleaning using an abrasive brush. Wipe clean with sponges and clean water.

Any local areas of corrosion or cracked paint can be treated by applying a heavy duty, zinc-rich, anti-corrosive coating, often called "Zinc Rich Primer" or "Cold Galv". First ensure the surface is free from dust, dirt, grease, oil, rust, scale and other contaminants and then follow the coating manufacturer's application instructions.

# MAINTENANCE INSTRUCTIONS

## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SUGGESTED REMEDY
<b>Cooler fails to start/ not running.</b>	Cooler in fault.	Clear active faults. Check wall controller fault code log. Check tri-colour LED for fault code.
	No power to cooler.	Check circuit breaker. Consult with building manager.
	Wall control in 7-day program mode.	Adjust setpoint and/or timer settings. Switch to manual mode to check fan operation.
	Cooler not receiving commands.	Set to PLC control method to W/C, MBS or BMS as required, see Multi-Magic Control Schemes.
<b>Inadequate cooling.</b>	Cooler running in vent mode.	Turn to cool mode.
	Incorrect wall control temperature setpoint.	Adjust wall control setpoint. Move wall control to more appropriate location.
	DEC stage not operating (Supercool coolers only.)	Check controller humidity setpoint is not too high. Check cooler device type is set correctly (CW-H15S or CW-H15S Plus)
	Plenum pressures too low.	See Commissioning section for Air Flow Balancing
	Clogged or dirty inlet air filters	Clean or replace air filters.
	Clogged or dirty heat exchanger cores.	Clean or replace cores.
	Water pump failure.	Check all pumps are operating.
	Pumps run but insufficient water in tank.	Clean or replace water probe. Check water management probe position relative to drain valve overflow Check cooler is level.
	Pumps run but no water circulation or heat exchanger cores lack water	Clean pump strainer. Check water distribution system for possible obstruction in hoses. Check for blockages in the spreaders feeding the core assemblies.
	Inadequate exhaust from building.	Make sure there is adequate provision for exhausting air from building (open windows and doors).
	Under-sized ducts. Under-sized cooler.	Carry out cooling load design to determine correct size unit, ducting and outlets required. Discuss with building manager.
High ambient humidity.	On days during summer when ambient humidity is high the cooler will not reduce the temperature as much as on drier days. There is no remedy.	
<b>Excessive humidity.</b>	Inadequate exhaust from building.	Make sure there is adequate provision for exhausting air from building (open windows and doors).
	Reduce DEC usage (Supercool coolers only.)	Discuss with building manager Adjust controls program.
<b>Noisy cooler.</b>	Fan out of balance due to dirt, etc.	Clean the fan.
	Air duct noise	Increase size of ducts. Increase size of room registers/grilles
<b>Unpleasant odour.</b>	New heat exchanger cores.	See Commissioning Section for Cooling Core Flush
	Cooler located near source of unpleasant odour.	Remove source of odour or relocate cooler.
	Algae in reservoir water.	Drain reservoir, clean thoroughly with strong cleansing agent, refill.
<b>External water leaks.</b>	Cores remain wet after shutdown.	Run cooler on VENT mode after cooling cycle to dry heat exchanger cores out.
	Loose water hose connections.	Check and tighten connections.
	Blocked or undersized drains.	Check and clean drain lines.
<b>Water carryover in supply airstream.</b>	Excessive amounts of water from drain hose.	Check drain valve seal. Check water management probe position relative to drain valve overflow. Check cooler is level.
	Clogged or dirty heat exchanger cores.	Clean or replace cores.
	New heat exchanger cores.	See Commissioning section for Cooling Core Flush
<b>Water carryover in exhaust airstream.</b>	Heat exchanger cores not fitted correctly into plenum.	Check for air gaps around water spreaders and between cores.
	Plenum pressures too high	See Commissioning section for Air Flow Balancing
	External static pressure too high.	Increase size of ducts. Increase size of room registers/grilles.
<b>Water carryover in exhaust airstream.</b>	Core seals/spreaders moved during transport.	Check spreader assemblies securely clamped to top of cores and gaps between cores covered up. Check core doors correctly sealing against sides of cores.

# WARRANTY TERMS (AUSTRALIA)

## HOW TO REGISTER YOUR PRODUCT WARRANTY (Australia only)

Please register your warranty online by visiting [seeleyinternational.com](http://seeleyinternational.com)

**Step 1** - select “**Support**” then “**Register for Warranty**”

**Step 2** Enter your product serial number and “**Submit**”

**Step 3** Enter the required information and “**Submit**”

**Important Note:** You need to have the following information to complete your registration:

- your unit model and size
- serial number
- date your system was installed
- name of the dealer you purchased it from

*Please complete this section. You will also need to retain your purchase receipt, and proof of any warranty period extension.*

Brand: \_\_\_\_\_

Model: \_\_\_\_\_

Serial No: \_\_\_\_\_

Customer Name: \_\_\_\_\_

Installation Address: \_\_\_\_\_

Installation Type: Residential / Non Residential / Commercial

Date of installation: \_\_\_\_\_

Installer / Dealer: \_\_\_\_\_

As with any product that has moving parts or is subject to wear and tear, it is **VERY IMPORTANT** that you maintain your Cooler and have it regularly serviced. It is a condition of warranty cover for your Cooler that you comply with all of the maintenance and service requirements set out in the Owner's / Operation / Service Manual. Compliance with these requirements will prolong the life of your Cooler. Further, it is also a condition of warranty cover that each item in the Maintenance Schedule in the Owner's / Operation / Service Manual is performed with the frequency indicated, by a qualified, licensed technician, and that the Maintenance Schedule is properly filled out (i.e. names, signature, date, and action taken) when the item is completed.

**ANY FAILURE TO CARRY OUT THE REQUIRED MAINTENANCE AND SERVICING REQUIREMENTS, AND ANY FAILURE TO PROPERLY FILL OUT THE MAINTENANCE SCHEDULE, WILL VOID YOUR WARRANTY.**

## WARRANTY TERMS (AUSTRALIA)

In this warranty:

**We** or **us** means Seeley International Pty Ltd (Seeley) ABN 23 054 687 035, and our contact details are set out at the end of this warranty;

**You** means you, the original end-user purchaser of the Goods;

**Supplier** means the authorised distributor or retailer of the Goods that sold you the Goods in Australia;

**Goods** means the product, unit, appliance or equipment which was accompanied by this warranty and purchased in Australia; and

**Relevant Warranty Period** means the various warranty periods as described in clause 1 and clause 3 below, as appropriate.

Our Goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the Goods repaired or replaced if the Goods fail to be of acceptable quality and the failure does not amount to a major failure.

In addition to any rights and remedies that You may have under the Australian Consumer Law or any other law, subject to the terms of this warranty, We provide the following warranty:

1. If during the first one (1) years from the date of purchase, the Goods upon examination prove defective by reason of improper workmanship or material, We will repair or replace, at our option, the Goods or any part thereof without charge for either parts or labour, during normal working hours.
2. The warranty granted under clause 1 applies to all components which form part of the original cooler, but does not cover:
  - a) fair or normal wear and tear;
  - b) damage, loss or claims caused by, resulting from, or arising out of any utilities that service or are connected to the Goods. This includes but it is not limited to electrical surges, and inadequacies, failure, or other problems in or with any electricity, power, or water supply to the Goods;
  - c) after the first year: (i) the replacement, supply, or servicing of consumable items (including without limitation cooler pads, washers, seals, drive belts) and (ii) maintenance adjustments to the cooler; and
  - d) despite clause 2.c. above, air filters;
  - e) installation (including without limitation ductwork, fittings, and other related installation components) which is excluded.
  - f) batteries (including damage caused by leaking or faulty batteries), cracking or breaking of display screens in controllers, physical damage caused by the user or third parties, and accidental breakage.
3. Seeley also warrants the Fan Motor for the first three (3) years from the date of the Goods purchase, if upon examination prove defective by reason of improper workmanship or material, We will repair or replace at our option, the Fan Motor or any part thereof without charge for parts, during normal working hours.
4. During the period to which any expressed warranty applies, all defective part(s) shall be replaced or repaired (at the discretion of Seeley) without charge for either parts or labour, during normal working hours. Should we deem in our absolute discretion to replace the Goods pursuant to clause 1 or clause 3, we may substitute any similar good even if it is not on our current price/equipment list. Further, Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the Goods.
5. We are under no obligation to repair or replace the Goods or Parts under clause 1 and 3 above if (i) the Goods have not been installed and commissioned in accordance with the Installation Manual (ii) the Goods have not been installed and commissioned properly or competently, (iii) the Goods have not been operated, serviced and maintained in accordance with the instructions provided in the Owner's Manual, or (iv) if any such service or maintenance has not been properly or competently performed. It is a condition of warranty cover that each item in the Maintenance Schedule in the Owner's / Operation / Service Manual (if it was published with such a Schedule) is performed with the frequency indicated, by a qualified, licensed technician, and that the Maintenance Schedule is properly filled out (ie names, signature, date, and action taken) when the item is completed. Any failure to carry out the required maintenance and servicing requirements, and any failure to properly fill out a Maintenance Schedule in the Manual, will void your warranty. The addition of any third party device, (except where it is required by the installation instructions and complies with those instructions), or the removal or alteration of any Seeley component, or damage due to misuse of the unit, or faulty installation or commissioning, will void this warranty.
6. As far as the law permits, We will not be liable for any consequential loss suffered through, or resulting from, the non-operation, or ineffective operation of the cooler. The warranties granted under clause 1 and clause 3 do not cover damage to the cooler or other loss resulting from acts of God.
7. No other person, company or corporation is authorised to offer, or give on our behalf, any other warranty. The benefits conferred are in favour of You and any person deriving title to the cooler whilst in its original place of installation. Nothing in this warranty shall be construed as affecting any rights You may have under all the relevant laws, or Commonwealth or State Legislation which give You rights which cannot be modified or excluded by agreement.
8. In order to claim under the warranties granted under clause 1 or clause 3 You must:
  - a) either:
    - contact us within the Relevant Warranty Period on Australia 1300 650 644; or
    - log a warranty claim on our website (website address below) within the Relevant Warranty Period; and
  - b) make available for inspection by the service agent who will come to the location of the Goods or send to us at the address below within the Relevant Warranty Period: (i) the legible and unmodified original proof of purchase, which clearly indicates the name and address of the original retailer, the date and place of purchase, the product name or other product serial number, (ii) all of your records of all service and maintenance carried out to the Goods, plus the Maintenance Schedule in the Owner's Manual (if it was published with such a Schedule), (iii) a copy of the completed Warranty Information section above, and (iv) if an extended warranty period was provided by Seeley International for the Goods, then the relevant document provided by Seeley International confirming that extended warranty period. If you choose to send the documents described in (i) to (iv) to Seeley International, then they must be accompanied by a covering letter which states your name and address and daytime telephone number, the address at which the Goods are installed, and the model and serial number of the Goods.

## WARRANTY TERMS (AUSTRALIA)

9. The warranty granted in clause 1 and clause 3 covers the costs of parts and labour but you will be responsible for:
- the cost of travel incurred for a Seeley International service agent to get to and from the location of the Goods if the location of the Goods is either: (i) outside the metropolitan areas of the capital cities; or (ii) more than 35 kilometres from an authorised Seeley International branch or service representative; and
  - any costs for additional labour or equipment associated with gaining acceptable and safe service access to the Goods installed in restricted, high or unsafe locations, and/ or the removal and replacement of any barrier, walls, roofs, fences etc; and
  - any costs incurred by the Seeley International service agent in gaining access to the Goods which is necessary to comply with any safety or workplace safety requirements and/or any other relevant regulations. For the avoidance of doubt, the reference to any costs incurred also includes the cost of any necessary site inductions.
10. We are not responsible in any way for any failure and/or inadequate performance of the Goods which arises from or is connected to the use in the Goods of non-genuine spare parts. Seeley International strongly recommends that only spare parts supplied or approved by it are used in the Goods.
11. The employees and Executive of Seeley International are not responsible for the installation of the Goods and expressly disclaim all liability resulting from incorrect installations or installations that do not conform to local electrical codes, local plumbing codes, Occupational Health and Safety requirements, and by laws which are legislated or in effect at the time of installation.
12. This warranty is only valid and enforceable in Australia.

**Note:** It is important that the safety and privacy of our service technicians is protected at all times. Accordingly, We and our Seeley International service agents reserve the right to refuse service if (i) safety and accessibility to the unit cannot be guaranteed or (ii) the owner of the unit, occupant of the site where the Goods are located, or any other third party seeks to take photographs, or make a video or audio recording, of the service technician(s) while they are on the site or carrying out service to the unit. If a service technician attends the site but subsequently leaves for any of these reasons then a service charge will be made for the call which charge shall be a debt immediately due and payable by the person or entity that has made the claim under this Warranty. If a service call reveals no warranty fault found with the Goods, a charge will be made for the call.

Our liability under this warranty is limited to the extent permitted by law. That is, to the extent that it is fair and reasonable, if the Goods are not of a kind ordinarily acquired for personal, domestic or household use or consumption, your remedies associated with any failure or defect of the Product will be limited to:

- the replacement of the Goods or the supply of equivalent goods;
  - the repair of the Goods;
  - the payment of the cost of replacing the Goods or of acquiring equivalent goods; or
  - the payment of the cost of having the Goods repaired
- and subject to the terms and conditions included in this warranty.

### SERVICE DEPARTMENT

Seeley International Pty Ltd  
112 O'Sullivan Beach Road  
Lonsdale, South Australia 5160  
Customer Service Centre 08 8328 3844  
Website: [www.seeleyinternational.com](http://www.seeleyinternational.com)

### FOR SERVICE

To book a Service on your Seeley International product:  
Visit [www.seeleyinternational.com](http://www.seeleyinternational.com) the select **“Support”** and **“Find Agent / Book Service”** then enter the required information.  
or Phone Australia 1300 650 644 to be directed to your closest authorised Service Agent.

### PRIVACY NOTICE

Seeley International Pty Ltd ABN 23 054 687 035 will use the personal information you provide us with to provide warranty support for the product you have purchased and to inform you about other products and services. If you choose not to supply us with the information requested, we may be unable to provide you with warranty support. We may also disclose your information to third parties, such as related entities; retailers, distributors, service agents and contractors who are affiliated with us; or marketing or market research companies. If you would prefer not to receive direct marketing communications from us, please follow the instructions to “unsubscribe” which will be included in the direct marketing communications we send you, or contact our Privacy Officer using the details set out below. While we do not currently transfer personal information to overseas recipients or store personal information overseas, if we transfer your information to third parties who do so, we will take reasonable steps to ensure that the overseas recipients do not breach the Australian Privacy Principles. By registering your warranty, you consent to having your personal information used in this way. Please read our Privacy Policy on our website [www.seeleyinternational.com](http://www.seeleyinternational.com) for further explanation of how we collect, use, hold and disclose personal information, and how you may access and seek correction of your information. It also sets out how you may complain about a breach of the Australian Privacy Principles, and how we will deal with your complaint. You may contact us at: Privacy Officer, Seeley International Pty Ltd, 112 O'Sullivan Beach Road, Lonsdale, South Australia 5160.





## WARRANTY TERMS (USA)

In this warranty:

**We** or **Us** means Convair Cooler Corporation doing business as Seeley International Americas (“SIA”), and our contact details are set out at the end of this warranty;

**You** and **Purchaser** means the original end-user purchaser of the Goods;

**Supplier** means the authorized distributor or retailer which sold you the Goods;

**Goods** means the CW3, CW-H, or CW80 model of the Climate Wizard cooler which was accompanied by this warranty and is intended for industrial and commercial use and not for personal, residential, or household use. There is no warranty on the Goods for personal, residential, or household use; and

**Relevant Warranty Period** means the warranty period described in “Express Limited Warranty” below.

Do not use cooler cleaners, cooler treatment, or other additives to your cooler. The use of any of these products will void your warranty and may impair the performance of your cooler.

### ELIGIBILITY: THE COOLER MUST BE REGISTERED WITHIN 45 DAYS OF INSTALLATION AT:

[www.seeleyinternational.com/americaswarranty](http://www.seeleyinternational.com/americaswarranty)

**SIA SHALL HAVE NO LIABILITY RELATED TO THE CLIMATE WIZARD COOLER OTHER THAN FOR BREACH OF THE EXPRESS WARRANTY STATED HEREIN, AND YOU RELEASE AND DISCHARGE US FROM ALL OTHER CLAIMS, WHETHER IN CONTRACT OR TORT, BY STATUTE OR COMMON LAW, AND YOU FURTHER AGREE TO INDEMNIFY AND HOLD US HARMLESS FROM ALL OTHER CLAIMS (INCLUDING BUT NOT LIMITED TO CLAIMS ALLEGING PRODUCT LIABILITY, STRICT LIABILITY, DECEPTIVE TRADE PRACTICES, BODILY INJURY, AND/OR PROPERTY DAMAGE) TO THE MAXIMUM EXTENT PERMISSIBLE UNDER LAW).**

**THE EXPRESS WARRANTY PROVIDED HEREIN BY SIA IS THE SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. EXCEPT FOR THE EXPRESS LIMITED WARRANTIES HEREIN, THE CLIMATE WIZARD COOLER IS SOLD “AS IS, WHERE IS.” NO OTHER PERSON OR ENTITY IS AUTHORIZED TO OFFER, OR GIVE YOU, ON OUR BEHALF, ANY OTHER WARRANTY.**

### EXPRESS LIMITED WARRANTY TERM:

SUBJECT TO THE CONDITIONS AND EXCEPTIONS STATED HEREIN, SIA warrants the CLIMATE WIZARD COOLER sold by SIA as follows:

1. SIA warrants the Cooler cabinet only (base, top, side panels) against corrosion due to normal operation for 1 year.
2. SIA warrants the structural integrity of all plastic components against defects in materials or workmanship for 1 year.
3. SIA warrants, for 1 year, the original factory-installed water pumps, motors, Chlorinator, Water Solenoid, Water Probe, Drain Valve and controls against all defects in material and workmanship.
4. SIA warrants the factory installed cooler pads (cores) against de-lamination due to manufacturing defects for 1 year. REPLACEMENT OF AIR FILTERS AND/OR COOLER PADS DUE TO NORMAL WEAR AND TEAR IS A COMMON MAINTENANCE FUNCTION AND IS NOT COVERED BY THIS WARRANTY.
5. All labor costs incurred for installation, removal, or re-installation are the purchaser’s responsibility.
6. All shipping costs for replacement parts are the purchaser’s responsibility.

### EXPRESS LIMITED WARRANTY COMMENCEMENT:

Warranty coverage begins on the installation date. The installation date is either:

1. The date that the Cooler was originally commissioned (commissioning being the process that occurs on, or shortly after, the Cooler is installed whereby the installer checks the installation of the Cooler, and makes any final adjustments, before hand-over to the purchaser). The date the Cooler was commissioned must be provided to Seeley at the time of warranty registration; or
2. If the date the Cooler was originally commissioned cannot be verified by Seeley, the installation date shall be deemed to be the date on the purchaser’s invoice for the purchase of the Cooler.

However, if the Cooler is not installed within 90 days of the date on the purchaser’s invoice for the purchase of the Cooler, then the warranty coverage commences on the date that is 90 days from the date on the purchaser’s invoice.

**THE DATE ON THE PURCHASER’S INVOICE FOR THE PURCHASE OF THE COOLER MUST BE GENUINE. A NON-GENUINE DATE WILL NOT BE ACCEPTED BY SIA.**

### LIMITED REMEDIES:

**THE EXPRESS REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR ALL CLAIMS RELATED TO THE CLIMATE WIZARD, AND ARE IN LIEU OF ALL OTHER REMEDIES, WHICH ARE HEREBY DISCLAIMED BY SIA AND WAIVED BY YOU TO THE FULLEST EXTENT PERMISSIBLE BY LAW (INCLUDING BUT NOT LIMITED TO WAIVER OF ALL DECEPTIVE TRADE PRACTICES STATUTES).**

# WARRANTY TERMS (USA)

## EXPRESS LIMITED REMEDIES:

SUBJECT TO THE CONDITIONS AND EXCEPTIONS STATED HEREIN, your remedies for any claim related to the CLIMATE WIZARD COOLER are limited to the following:

For breach of the foregoing Express Limited Warranty, if a claim is timely made within the applicable Relevant Warranty Period, **THE SOLE AND EXCLUSIVE REMEDY SHALL BE, AT THE OPTION OF SIA AND AT SIA'S COST, TO REPAIR/ REPLACE THE DEFECTIVE PART, REPLACE THE COOLER, OR REFUND THE PURCHASE PRICE PAID** for the Climate Wizard cooler (any such refund excluding price paid by end-user for delivery, installation, service, repairs and/or maintenance). If SIA elects to replace or repair either parts or coolers, SIA may, in its discretion, use refurbished parts or coolers in making the replacement or repairs, and may, in its discretion, substitute similar SIA authorized parts or coolers instead of the identical warranted part or cooler, even if such parts or coolers are not on its current price/equipment list. You shall have no recourse for breach of the Express Limited Warranty if written notice of claim is not received by SIA within the applicable Relevant Warranty Period, in which case your claim shall be deemed time-barred for all purpose

**EXCLUSIONS FROM EXPRESS LIMITED WARRANTY.** The EXPRESS LIMITED WARRANTY excludes coverage for and SIA disclaims (and you hold harmless from and indemnify SIA against) any and all liability to or for:

1. Anyone other than You or any person directly deriving title to the Climate Wizard cooler from You whilst in its original place of installation; (i.e. this Express Limited Warranty is assignable by You only to the person or entity who directly acquires or buys from you your business and/or property, but the assignee has no further right of assignment); and
2. Normal wear and tear; and
3. The cooler's cooling performance, efficiency, water, and electricity consumption, all of which may vary widely depending upon the environment in which the cooler is installed and operates, the area, composition and insulation of the interior structure which it is intended to cool, and how it is used; and
4. Damage, loss or claims caused by, resulting from, or arising out of any utilities, including, but not limited to, electrical surges, and inadequacies, interruptions, failure, or other problems in or with electricity, power, or clean water supply to the cooler; and
5. Damage, loss or claims caused by, resulting from, or arising out of installation, servicing, maintenance, or repair that is not performed in accordance with SIA's written instructions; and
6. The replacement, supply, or servicing of consumable items (including, without limitation, washers, seals, bearings, drive belts, float valves, plumbing components, cooler pads); and
7. Calcification of the cooler pads, since calcification may be affected by minerals in the water supplied to the cooler and in the ambient air; and
8. Installation or re-installation of the cooler (including without limitation related ductwork, fittings, and other installation components) which is the responsibility of your Supplier and/or installer; and
9. Acts of God or nature, e.g., fire, flood, tornado, power outage, lightning, dust storm; or acts of theft or vandalism; or any intentional act which impairs the utility of or damages the cooler; and
10. All costs of labour and travel incurred in connection with repairing or replacing a defective part or the cooler; and
11. Any costs incurred by Us in connection with a warranty claim which We determine is not a valid claim covered by the Express Limited Warranty; and
12. Personal, residential, or household use of the Climate Wizard cooler.

## LOSS OF EXPRESS LIMITED WARRANTY:

**THE EXPRESS LIMITED WARRANTY SHALL BE NULL AND VOID, ALL LIABILITY FOR BREACH OF SUCH WARRANTIES OR OTHERWISE SHALL BE DEEMED DISCLAIMED, AND YOU SHALL WAIVE ALL RIGHTS AND REMEDIES OF ANY KIND FOR ANY ALLEGED DEFECT IN THE CLIMATE WIZARD COOLER, IF:**

1. The Climate Wizard cooler has not been installed and commissioned, in accordance with the instructions in the Owner's Manual, by a qualified, licensed, properly trained technician; OR
2. The Climate Wizard cooler has not been operated by you, and/or serviced and/or maintained by a qualified, licensed technician, in accordance with the instructions provided in the Owner's Manual; OR
3. You fail to maintain and present with any notice of claim the up-to-date Maintenance Schedule (if same is contained in the Owner Manual) showing all work performed on the cooler from installation, the date of each work item, a description of the work performed, and the name, signature and contact details of the qualified, licensed technician who performed the work; OR
4. Any installation, commissioning, service or maintenance has not been properly or competently performed in accordance with applicable electrical, plumbing, building and safety codes and regulations; OR
5. Use of any replacement parts or spare parts not authorized by SIA; OR
6. Addition of any third party device to (except where such addition is required by the installation instructions and complies with those instructions), or the removal, modification, or alteration of, the Climate Wizard cooler or any SIA component thereof; OR
7. The Climate Wizard cooler has been moved from the original place of installation (whether at the same premises or to different premises).

**EVEN IF THE EXCLUSIVE CONTRACTUAL REMEDY (OF REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE) PROVIDED HEREIN FAILS OF ITS ESSENTIAL PURPOSE, SIA SHALL NOT BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE, EXEMPLARY, OR SPECIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST REVENUES, DOWNTIME, LOSS OF USE, SUBSTITUTE EQUIPMENT, GOODWILL, DAMAGE TO OR REPLACEMENT OF YOUR OTHER EQUIPMENT AND PROPERTY. IN NO EVENT SHALL OUR LIABILITY EXCEED THE PURCHASE PRICE PAID FOR THE GOODS.**

## CONDITIONS TO WARRANTY CLAIM:

## WARRANTY TERMS (USA)

Failure to comply with the following conditions shall waive your warranty claim and release and discharge Us from any liability for same.

1. **NOTICE.** In order to make a claim hereunder, **You must send to the original Supplier of the cooler**, or a cooler contractor authorized by Us, or Us, written notice of the claim made, describing the breach claimed with particularity, stating the date you first learned of it, with your name, address and daytime telephone number, the address at which the Goods are installed, and the model and serial number of the Goods, by mail or (if to Us, then you may also do this through our website (see details below)), and the written notice (or claim lodged through our website) must be received within the Relevant Warranty Period:
  - If by mail to Us, then to:  
Customer Service Department  
Seeley International (Americas)  
4430 Glencoe Street  
Denver, CO 80216  
United States of America; or
  - If to Us through our website, then at:  
[www.seeleyinternational.com/americaswarranty](http://www.seeleyinternational.com/americaswarranty)
2. **PROOF OF PURCHASE AND SERVICE RECORDS.** You shall, in our discretion, within the Relevant Warranty Period, either send to us at the address below, or make available for inspection by the authorized person or company who repairs or replaces the defective part or cooler: (i) the legible and unmodified original proof of purchase, which clearly indicates the name and address of the original retailer, the date and place of purchase, the product name or other product serial number, and show you as the original end-user customer for the Goods, (ii) all of your records of installation, service and maintenance carried out to the Goods, plus the up-to-date Maintenance Schedule (if same exists) in the Owner's Manual, and (iii) your name and contact details.
3. **SAFE ACCESS TO THE GOODS.** You shall provide Us, or the authorized person or company that repairs or replaces the defective part or cooler, safe access to your premises and the specific location on your premises where the Goods are installed so that We and/or that authorized person or company may safely access and inspect the Goods and, if a breach of warranty is confirmed, make repairs or replace parts, whichever remedy We elect in our discretion.

### DISPUTE RESOLUTION:

1. **GOVERNING LAW.** This Limited Warranty and all disputes arising from or related to the Climate Wizard cooler sold herewith shall be governed by the Federal Arbitration Act and the laws of the State of Denver, excluding its conflicts of law rules and excluding application of the U.N. Convention on Contracts for the International Sale of Goods.
2. **FORUM.** All disputes arising from or related to this Limited Warranty or the Climate Wizard cooler (including but not limited to the validity of this arbitration clause) shall be exclusively resolved by binding arbitration conducted by an arbitrator pursuant to the Commercial Arbitration Rules of the American Arbitration Association in Denver, Colorado. You waive the right to join your claim with the claims of any other claimants in a class action or other proceeding, to the maximum extent that such waiver is permissible. The courts in Denver, Colorado shall be the exclusive venue for ancillary relief in aid of arbitration, to which venue and jurisdiction all parties consent. The arbitral award shall be final and non-appealable and shall be enforceable in any court of competent jurisdiction. You agree to maintain the confidentiality of and not to disclose the claims made in the arbitration, the evidence submitted therein, or the arbitral award, subject to both parties' rights to entry of judgment upon the award by a court of competent jurisdiction. This arbitration clause shall be binding upon all parties to a claim that relates in any way to this Limited Warranty or the Climate Wizard cooler, including Us, You, the Supplier, and all third parties.
3. **ATTORNEYS' FEES AND COSTS.** The prevailing party in any legal proceeding shall be entitled to recover its/his or her reasonable attorneys' fees and costs (including arbitration fees and costs paid).
4. **BINDING EFFECT.** This Limited Warranty is binding upon and shall inure to the benefit of Convair Cooler Corporation and its parent company, Seeley International Pty Ltd of Australia, which is the manufacturer of the Goods, and which has made a Limited Warranty to SIA that corresponds to this Limited Warranty; and to You and any person directly acquiring title to the Climate Wizard cooler from You whilst in its original place of installation.

### MISCELLANEOUS:

1. **Severability.** If any provision hereof is determined to be invalid or unenforceable, the remainder of this Limited Warranty shall continue in full and effect.
2. **Captions.** The captions or headings used for the provisions hereof are used for convenience only and shall not be interpreted to restrict the plain meaning of the provisions themselves.

### TO CONTACT US:

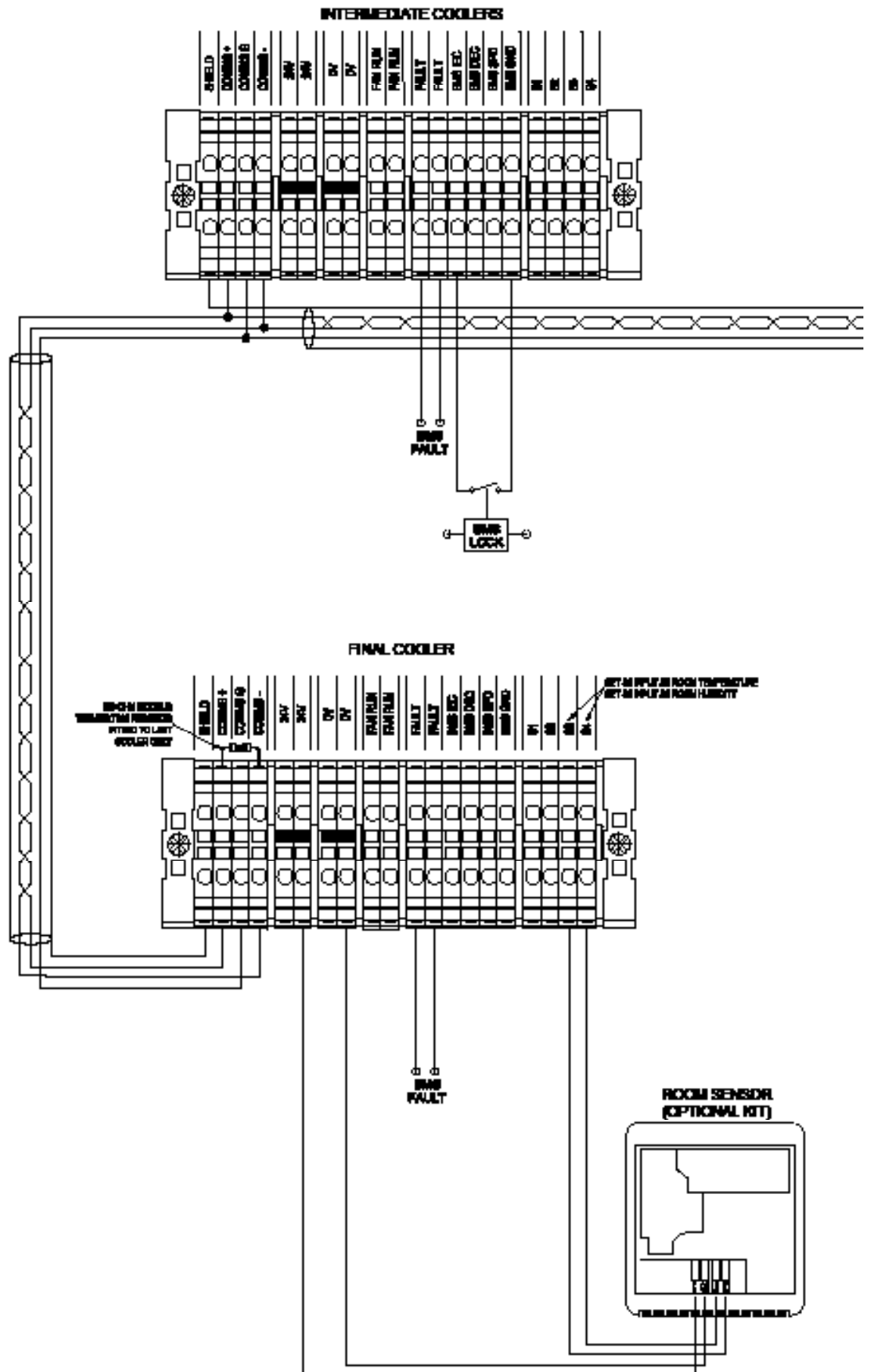
Customer Service Department  
Seeley International (Americas)  
4430 Glencoe Street  
Denver, CO 80216  
Tel: +1 (303) 375-0878  
[www.seeleyinternational.com/americaswarranty](http://www.seeleyinternational.com/americaswarranty)

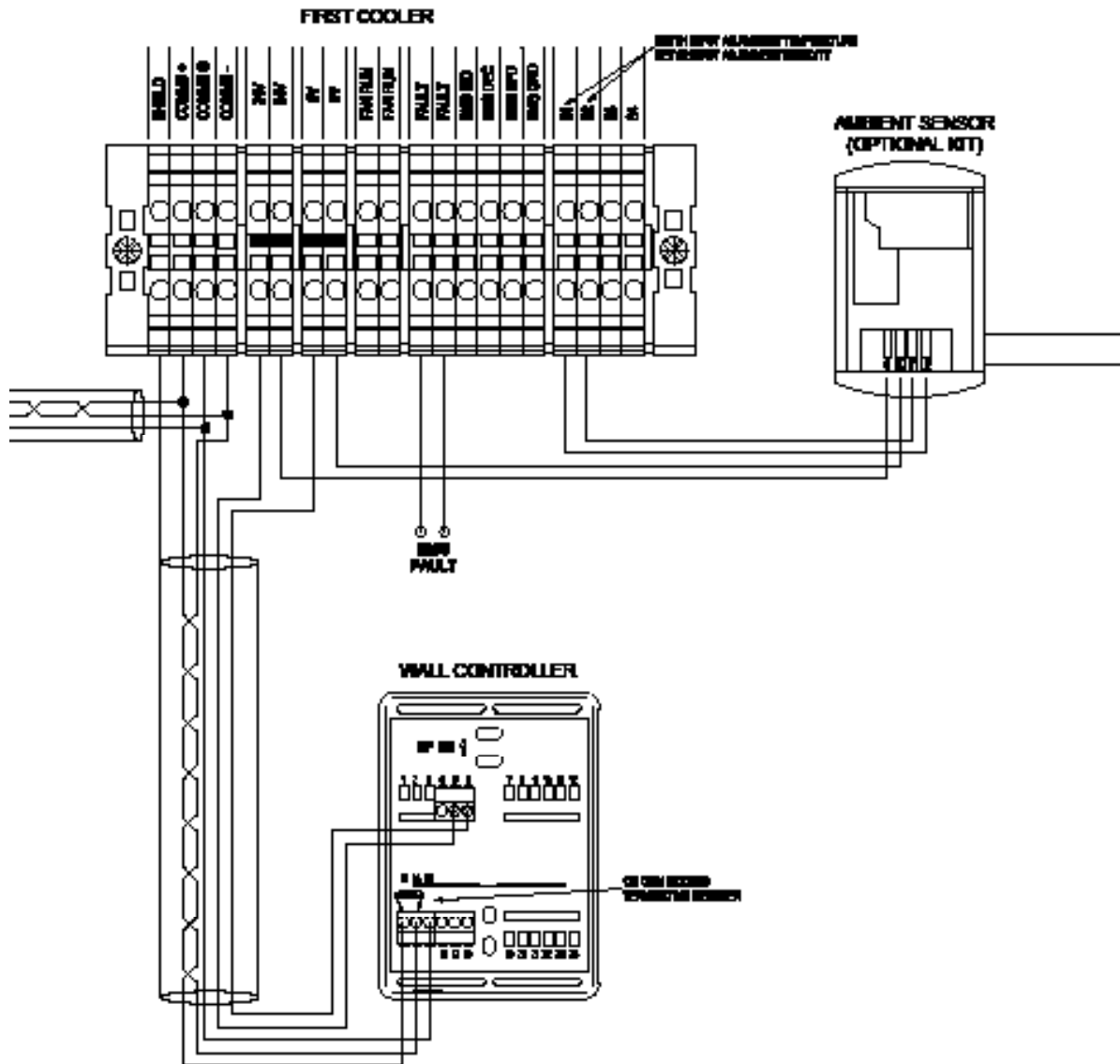




# APPENDIX A

## EXAMPLE WALL CONTROLLER WIRING





## COMMUNICATION CABLE SPECIFICATIONS

- Suitable for RS-485 applications
- Minimum 1 twisted pair (TP) and a third conductor
- Copper conductors
- 0.5 mm<sup>2</sup> / AWG 20
- Braided shield with drain wire
- Characteristic impedance 120Ω
- Nominal capacity between conductors 89 pF/m
- Nominal capacity between conductors and shielding 161pF/m

## MODBUS RS-485 CABLE WIRING RULES

- Communication wiring must be kept separate from AC power wiring.
- Always route communication cables at least 300mm (12") away from high voltage cables and high-power machines.
- Crossover high power cables at right angles.
- Maximum cable length from Wall Controller / Primary to first cooler is 100m.
- Maximum cable length between each cooler is 100m.
- Coolers must be connected in daisy-chain style, not star or multi-drop..



# APPENDIX C

## MODBUS REGISTERS

COMMANDS				
REGISTER	TYPE	DESCRIPTION		DETAILS
9200	UINT	Commands	Bit 0	IEC Enable (Indirect Evaporative Cooling)
			Bit 1	DEC Enable (Direct Evaporative Cooling)
			Bit 2	Fault Reset
			Bit 3	Manual Drain
			Bit 4-15	NOT USED
9201	UINT	Supply Fan Speed	0 - 1000	(0 to 100%) * 10 Minimum value of 200 needed to start the fan.
IEC or DEC inputs also require a Fan Speed input to start the watering cycles.				
STATUS				
9205	UINT	Status	Bit 0	FAULT
			Bit 1	Low Probe WET
			Bit 2	High Probe WET
			Bit 3	Inlet Solenoid OPEN
			Bit 4	Drain Valve OPEN
			Bit 5	Indirect Pump RUNNING
			Bit 6	Direct Pump RUNNING
			Bit 7	Chlorinator RUNNING
9206	UINT	Supply Fan Speed	0 - 100	0 – 100%
9207	UINT	Salinity of Tank	0 - 6615	Water Salinity Level (uS/cm)
9208	UINT	Chlorinator PWM	0 – 100	0 – 100% Output of the chlorinator
9209	UINT	Fault Code		Fault Code. If multiple faults are present, the fault codes will cycle.
9210	INT	Sensor Input 1 Value		Sensor Values depend on sensor type
9211	INT	Sensor Input 2 Value		Temperature °C /10 or °F/10
9212	INT	Sensor Input 3 Value		Relative Humidity %/10
9213	INT	Sensor Input 4 Value		Pressure Pa or inwg/100

## APPENDIX D

### BACNET OBJECT LIST

CONTROL		
Object Name	Object Type & Identifier	Details
BCN_CMD_IEC	Binary-value 0	IEC Enable (Indirect Evaporative Cooling)
BCN_CMD_DEC	Binary-value 1	DEC Enable (Direct Evaporative Cooling)
BCN_CMD_Spd	Analogue-value 0	0 to 10 Fan Speed
BCN_CMD_Drain	Binary-value 2	Manual Drain
BCN_CMD_ON_OFF	Binary-value 14	Cooler Run
BCN_CMD_FaultReset	Binary-value 4	Reset Fault Codes
BCNIntegrity	Binary-value 13	BACnet Integrity - See Notes.
RTCYear	Analogue-value 1	Range 00 to 99
RTCMonth	Analogue-value 2	Range 1 to 12
RTCDay	Analogue-value 3	Range 1 to 31
RTCHour	Analogue-value 4	Range 0 to 23
RTCMinute	Analogue-value 5	Range 0 to 59
RTCSecond	Analogue-value 6	Range 0 to 59
RTCDay Of Week	Analogue-value 7	Range 0 to 6 (0 = Sunday)
BCN_CMD_RTCSet	Binary-value 3	Set Time & Date

IEC or DEC inputs also require a Fan Speed input to run.

BACnet Integrity - Object resets every 5 seconds. Users must write to this object at least once every 30 minutes to avoid Fault Code 16

RTC analogue values can only be adjusted whilst "RTCSet" is active.

MONITORING		
Object Name	Object Type & Identifier	Details
STSIEC	Binary-value 5	IEC Pumps RUNNING
STSDEC	Binary-value 6	DEC Pumps RUNNING
STSError	Binary-value 7	Fault
STSLowProbe	Binary-value 8	Low Probe WET
STSHighProbe	Binary-value 9	High Prbe WET
STSSolenoid	Binary-value 10	Inlet Solenoid OPEN
STSDrain	Binary-value 11	Drain Valve OPEN
STSchlorinator	Binary-value 12	Chlorinator RUNNING
STSSupplyFSpd	Analogue-input 8	Supply Fan Speed Range 0 to 10
STSSalinity	Analogue-input 9	Water Salinity Level (uS/cm)
STSchIPWM	Analogue-input 10	Chlorinator PWM % (CW-H only)
STSFaultCode	Analogue-input 11	Fault Code. If multiple faults are present, the fault codes will cycle.
STSExhaustFSpd	Analogue-input 12	Exhaust fan speed (Vdc) (CW-80 only)
STSSensor1	Analogue-input 13	Sensor Values depend on sensor type Ambient Sensor Temperature -40 to 70°C or -40 to 158°F Ambient Sensor Relative Humidity 0 to 100 % Room Sensor Temperature 0 to 100°C or 32 to 212°F Room Sensor Relative Humidity 0 to 100 % Duct Sensor Temperature 0 to 100°C or 32 to 212°F Duct Sensor Relative Humidity 0 to 100 % Pressure Sensor 0 to 500Pa or 0 to 2.00 inwg (STSSensor5 and STSSensor6 are CW-80 only)
STSSensor2	Analogue-input 14	
STSSensor3	Analogue-input 15	
STSSensor4	Analogue-input 16	
STSSensor5	Analogue-input 17	
STSSensor6	Analogue-input 18	

Metric or Imperial units are dependent upon the units selected on the Multi-Magic PLC Settings page.





Affix serial & model  
number sticker here



**Warranty Service**

Australia: 1300 650 644

New Zealand: 0800 589 151

**Seeley International Technical Support**

Australia: 1300 650 399

New Zealand: 0800 589 152

For all other regions, contact your local distributor:

**[seeleyinternational.com](http://seeleyinternational.com)**

**Online Support Portal (AUS/NZ)**

Scan or Click QR Code



It is the policy of Seeley International to introduce continuous product improvement.

Accordingly, specifications are subject to change without notice.

Please consult with your dealer to confirm the specifications of the model selected.