AQUA LOGIC'S MULTI-TEMP® and Titan water-cooled Series Chiller and Heat Pump 230V 3Ø

INSTALLATION & OPERATING INSTRUCTIONS

Effective 11-2020

Thank you for purchasing an Aqua logic chiller and or heat pump. It has been designed and built to provide years of reliable, trouble-free service. It provides a precise water temperature control up to +/- 1.0°F (0.7°C) accuracy and features a continuous LED display of the current fluid temperature.



Models:
MT-1-WC thru MT-8-WC
HP-3-WC thru HP-5-WC



Models:
MT-4-WCV thru MT-8-WCV
MT-9-WCV thru MT-20-WC-460
HP-3-WCV thru HP-5-WCV
HP-6-WC thru HP-20-WC

BEFORE INSTALLING THE CHILLER

READ BOTH WARRANTY AND INSTALLATION INSTRUCTIONS.

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Important: Unpacking your chiller or heat pump

This chiller was properly packed and accepted by the transportation company for shipment. It is the responsibility of the transportation company to deliver it to you in perfect condition.

APPARENT DAMAGE OR LOSS

If, upon delivery, the shipping container or equipment indicates DAMAGE IN TRANSIT, such damaged goods should not be accepted until the transportation company's agent has noted on the freight bill, which he will give you, the nature and extent of the damage. If any part of this shipment is LOST IN TRANSIT, have the shortage noted on the freight bill by the agent.

CONCEALED DAMAGE

If, when this equipment is unpacked, shipping damage is discovered which was not apparent upon delivery, notify the transportation company IMMEDIATELY to inspect the damaged equipment. The inspector is REQUIRED to provide you with a DAMAGE INSPECTION report.

THIS INSPECTION MUST BE REQUESTED WITHIN FIFTEEN (15) DAYS OF DELIVERY. DO NOT MOVE DAMAGED SHIPMENTS FROM POINT OF DELIVERY. RETAIN ALL CONTAINERS AND PACKING FOR INSPECTION.

Protect yourself. File your claim immediately with the transportation company! Remember, Aqua logic Inc. is not responsible for any damage after the carrier accepts a shipment. Claim for FULL VALUE REIMBURSEMENT should be made by you against the transportation company. Replacement of the damaged equipment should be requested by the purchaser as a new order.

WARNING!!!

THIS DEVICE USES HIGH VOLTAGE ELECTRICAL POWER FOR OPERATION.
SAFETY PRECAUTIONS MUST BE OBSERVED.
CAREFULLY READ AND OBSERVE THE FOLLOWING TO AVOID ELECTRICAL SHOCK OR SEVERE DAMAGE TO THE EQUIPMENT.

- We recommend, as with all electrical equipment used in or around water, that you connect your electrical equipment to a ground-fault interrupt (GFI) protection circuit.
- **ALWAYS** turn the power off for the equipment at the source (circuit breaker) if there is any electrical problem, the electrical equipment or controller has been submerged in water.
- **ALWAYS** make sure that the electrical circuit you connect your electrical equipment to is rated at least 20% higher than the maximum current rating on the equipment.
- **ALWAYS** make sure that you operate the equipment at the correct voltage.
- Do **NOT** attempt to turn off the power at the chiller or controller if a problem occurs. Disconnect unit at the main power panel.
  Do **NOT** attempt to repair equipment. Call Aqua Logic for instructions.

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Very Important!

1. Allow only qualified licensed personnel to supply electric power to chiller or heat pump. Installation must be done in accordance with local and national electrical code. Multi-Temp Chillers and Titan heat pumps need a fusible disconnect installed within five feet. The chiller or heat pump needs a dedicated power supply. **Do not** share the power feed to with any other peripheral devices such as pumps, ultraviolet light sterilizers, or filters. Interlock device prevents the chiller from energizing without the pump being on.

2. Double check electrical specifications on unit's electrical access cover plate making sure of voltage, amperage, phase, and cps before energizing. (**Do not** remove any covers with electrical power on.)

3. Some control packages include timed switches that delay certain functions on initial start-up. Consult Aqua Logic Inc. for exact details before attempting servicing.

4. **Fluid must flow through the chiller or heat pump at all times.** See specification sheet for minimum and maximum flow rates. Flow rates less than specification may result in evaporator freeze-up and cracking PVC plastic evaporator shells and condenser overheating the unit causing premature compressor failure. Aqua Logic Inc. does not warranty evaporator shells operating under low flow conditions.

5. Incoming water pressure to the inlet of the evaporator must not exceed 40 psig. Pressures over 40 psi may cause damage to the evaporator shells not covered under warranty.

6. Incoming water pressure and temperature to the condenser inlet must not exceed 120 psig and 85 °F and below 55 °F (Contact Aqua Logic for water temperatures above 85 °F and below 55 °F)

Safety Precautions

1. Always wear safety eye wear and work gloves when installing equipment.

2. Never assume electrical power is disconnected. Disconnect and check with meter.

3. Keep hands out of electrical box areas when power is connected to equipment.

4. R-410A escaping into the air can cause frost-bite burns.

5. R-410A is toxic when burned.

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Installation Instructions:

Installation must proceed in accordance with national building and electrical codes by qualified technicians only.

For chiller or heat pump specifications see label on outside cover of the unit for particular details concerning model number, voltages, amperage, water flow rates and refrigerant type.

1. Place the chiller or heat pump in a ventilated area. Ambient air temperature must never exceed 110°F sustained.

2. Aqua Logic Inc. recommends the chiller or heat pump to be mounted outdoors with a protective cover. Outdoor covers must be built allowing at least 3 feet from any walls and having access on all five sides.

3. If the chiller must be inside a building with be built allowing at least 3 feet from any walls and having access on all five sides.

4. The PVC evaporator is located horizontal under the condensing unit or vertical next to condensing unit. Both type evaporators have PVC slip NPS water connections on the inlet and outlet. Follow the inlet and outlet flow is as designated.

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Initial Start-up: Read all of the instructions before energizing unit.

Caution: It's important to allow the oil in the compressor(s) to warm-up at least 8 hours before starting up the unit. If the ambient air temperature is below 60˚F, apply power to the unit and set controller so the compressor(s) do not energize or by-pass the heat exchanger water supply so the flow switch will not activate the unit.

Adjust temperature set point to desired water temperature. When the thermostat calls for cooling, a delay timer will start the system after 3 minutes. The chiller will pull the water temperature down to the set point, and shut the unit down. When the water temperature rises above the differential setting, the chiller will repeat the delay cycle and cool down to temperature set point.

1. Target fluid temperature is limited to a range of 40° F to 80° F on all standard MultiTemp Chillers. Without special factory installed equipment, possible damage to the unit can occur when attempting to access fluid temperatures outside this range. Aqua Logic, Inc.'s warranty does not apply to application temperatures under 40°F or above 80° F without special factory modifications.

2. Water going to the chiller or heat pump should be protected by filters to keep debris from collecting in the evaporator shells. Clogged shells lead to heat exchange problems and will void the warranty.

3. Improperly installed or out of adjustment rapid sand filters or fluidized beds can put sand into the stream of water flowing into the chiller. This condition is similar to "sand blasting" and may abrade holes in plumbing lines or the titanium coils. Conditions like these would void the Aqua Logic, Inc. warranty.

   40° F to 80° F Fluid Temperature Applications

   Heat exchanger wetted parts contain titanium, PVC plastic, rubber, and polymer. These materials are non-reactive with fresh and salt water. You must consult with Aqua Logic, Inc. if any other fluids are to be pumped through the chiller.

   If humid or wet conditions exist where chiller is to be located, care must be taken to prevent water from getting on electrical components. Condensing unit parts are made from aluminum, steel and are subject to rapid corrosion, especially near sea water.

   The chiller or heat pump operates by virtue of a thermostat that senses water temperature inside the probe well. When the temperature set point is satisfied, the supply of refrigerant to the evaporator is stopped. This initiates the compressor shuts off. When the thermostat calls for cooling or heating, the supply of refrigerant is re-established to the evaporator, but the system has a time delay of approximately 3 or 5 minutes before the compressor goes on again.

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Chiller Temperature Controller



This digital controller has been pre-programmed with all the necessary parameters to ensure reliable service and operation. The controller is pre-set from the factory with a temperature range from 30 °F to 100 °F with a display resolution of 1 degree °F and with a 1 °F temperature differential.

Controller Setpoint Set-up

To modify the set point* temperature. Touch and release the “SET” button. SP will be displayed. Touch the “SET” button again and the pre-programmed set point temperature will be displayed. Touch the up arrow ▲ to increase or the down arrow ▼ to decrease the set point.

Once the desired set point value has been selected, do not touch any of the keys for 1 minute or touch the “SET” and the “DOWN” ▼ arrow at the same time. The control will then revert to displaying the current water temperature, but will now control the water temperature to the desired set point.

OUT1-This indicates that the chiller will be energized**.**

Temperature Differential:

When the water has reached the set point temperature, the chiller will switch off and will not switch back on until the water temperature has changed by 1 °F. This value is known as the temperature differential between on and off cycles. Refer to the temperature control parameters table to change the settings.

Display Calibration and Program Parameters

If the displayed water temperature on the control is different from the system water temperature, than an adjustment to the control can be done. The easiest way to calibrate the control is to press and hold the "Set" button for 8 seconds. The parameter “O” will be displayed. Wait 4 seconds. Then press the “SET” button and the “SP” will be displayed. Use the down ▼ or up ▲ arrow until you see the menu parameter "P1". Then press the “SET” button one time. The display will show “0”. Press the up or down arrows to adjust to the temperature offset. Once you have set the correct temperature offset, press "SET" button one more time and then wait 1 minute or press the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the programming. The display should return to the water temperature. The display should read correct water temperature readout.

See next page “SINGLE STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE” to change other settings

To adjust other parameters in the control contact Aqua Logic, Inc. for help.
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SINGLE STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE

Parr.		Description	Units	Range	Factory Settings	Note Change
1	SP1	Set Point	Degrees	r1 to r6	75	
2	r0	Differential / Hysteresis	Degrees	1 to 20°	1	
3	r1	Lower value set point	Degrees	-50 to 150 °C -50 to 302 °F	30°F	
4	r2	Higher value set point	Degrees	-50 to 150 °C -50 to 302 °F	100°F	
5	d0	Heating or Cooling	Option	Ht or Co	Co	
6	d2	Time for Defrosting	Minutes	0 to 59	0	
7	d8	Interval Time between Defrosts	Hours	0 to 24	0	
8	c0	Min. time stop for compressor	Minutes	0 to 59	0	
9	c1	Continuous cycle time	Hours	0 to 24	0	
10	c2	On time of fault cycle	Minutes	0 to 99	0	
11	c3	Off time of fault cycle	Minutes	0 to 99	0	
12	P0	Temperature scale selection	Option	°C / °F	F	
13	P1	Ambient Probe Adjustment	Degrees	-10 to 10°	0	
14	H5	Parameter Access Code	Number	0 to 99	0	
15	H6	Probe input type	Option	Ptc / Ntc	Ptc	
16	t0	Max. temperature on display	Degrees	-50 to 150 °C -50 to 302 °F	100°F	

PARAMETER DESCRIPTIONS

SP = Set Point. Temperature desired to regulate the machine. Can vary from r1 to r2.
r0 = Differential. Heating: If temperature is ≥ SP then output is OFF. If temperature is < SP - r0 then output is ON. **Cooling**: If temperature is ≥ SP + r0 then output is ON. If temperature is < SP then output is OFF.
r1 = Lower Set Point Limit.
r2 = Upper Set Point Limit.
d0 = Heat or Cooling Control. Ht = heating control, Co = cooling control.
d2 = Not used
d8 = Not used.
c0 = Minimum Time for Compressor to be OFF. Minimum time for the compressor to stop until it can start again.
c1 = Continuous Cycle Time. The remaining time for a continuous cooling cycle.
c2 = ON Time of fault cycle, during probe error.
c3 = OFF Time of fault cycle, during probe error.
P0 = Selection of Engineering units between F and C.
P1 = Ambient Probe Calibration. Offsets temperature in degrees to adjust the ambient probe.
H5 = Access Code to Parameters. Factory-set to 0.
H6 = Selection of Input Probe Type: PTC or NTC.
t0 = Temperature Display Limit. Maximum temperature shown on the display, although the real temperature can be greater.

OPERATION IN CASE OF ERROR

If the probe or thermostat memory should fail, the chiller or heater will turn off.

Error Messages

In normal operation, the probe temperature will be shown. In case of alarm press the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the alarm. An error messages will be shown:

- **Er** – Memory error
- **--** Shorted –circuited probe error
- **oo-** Open probe

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Heat Pump Temperature Controller



Controller Setpoint Set-up

Note: Always have the chiller set point (Out1) equal or higher than the heater (Out2) set point. DO NOT OVERLAP THESE SET POINTS

To modify the Set Points SP1 and SP2.

Touch the “SET” button. OUT1 LED and out1 set value will flash on the display. Modify the out1 set point value using up arrow ▲ to increase or the down arrow ▼ to decrease the set point.

Touch the SET button to store the out1 set point value and advance to out2 set point value. Modify the out2 set point value using up arrow ▲ to increase or the down arrow ▼ to decrease the set point. Touch the SET button and the DOWN arrow ▼ to store the value and return to home screen.

OUT1 Indicates that the chilling mode and the OUT2 is the heating mode is energized. (Both OUT1 and OUT2 should **never** be on at the same time)

Operation Modes

When in the cooling mode (Out1) the water temperature needs to go above the set point by one degree for it to activate the chiller. It will turn off once the water temperature has reached set point.

In the heating mode (Out2) the water temperature has to go down below the set point by one degree to activate the heater. It will turn off once the water temperature has reached the set point.

NOTE: Both OUT1 and OUT2 should **never** be on at the same time.

Temperature Differential:

When the water has reached the set point temperature, the chiller will switch off and will not switch back on until the water temperature has changed by 1 °F. This value is known as the temperature differential between on and off cycles. Refer to the temperature control parameters table to change the settings.

Display Calibration and Program Parameters

If the displayed water temperature on the control is different from the system water temperature, than an adjustment to the control can be done. The easiest way to calibrate the control is to touch and hold the "Set" button for 8 seconds. The parameter “O” will be displayed. Wait 4 seconds. Then touch the “SET” button and the “SP” will be displayed. Use the down ▼ or up ▲ arrow until you see the menu parameter "P1". Then touch the “SET” button one time. The display will show “0”. Touch the up or down arrows to adjust to the temperature offset. Once you have set the correct temperature offset, touch "SET" button one more time and then wait 1 minute or touch the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the programming. The display should return to the water temperature. The display should read correct water temperature readout.

See next page “DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE” to change other settings

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DUAL STAGE TEMPERATURE CONTROL PROGRAMMABLE PARAMETERS TABLE

Parr	Description	Units	Range	Def. Set	Note
SP1	Set Point 1 out1 (CHILLER)	Degrees	r4 to r6	75	
SP2	Set Point 2 out2 (HEATER)	Degrees	r5 to r7	75	
r0	Dependency SP1 – SP2	Range	ind / dep	ind	
r1	Differential for SP1	Degrees	0.1 to 20	1	
r2	Differential for SP2	Degrees	0.1 to 20	1	
r3	Band differential	Degrees	0.1 to 20	1	
r4	Lower value for SP1	Degrees	-99 to r6	30	
r5	Lower value for SP2	Degrees	-99 to r7	30	
r6	Higher value for SP1	Degrees	r4 to 302	100	
r7	Higher value for SP2	Degrees	r5 to 302	100	
r8	Regulation or operating mode	Range	On1/On2/nEU	On1	
A0	Alarm differential	Degrees	0.1 to 20	1	
A1	Maximum alarm probe 1	Degrees	0.1 to 99	100	
A2	Maximum alarm probe 2	Degrees	0.1 to 99	-	
A3	Minimum alarm probe 1	Degrees	0.1 to 99	35	
A5	Alarm verification time	h-m	0.0 to 18	1	
A4	Minimum alarm probe 2	Degrees	0.1 to 99	-	
A6	Alarm probe 1 selection	Range	AHL/Ano/AH/AL	Ano	
A7	Alarm probe 2 selection	Range	AHL/Ano/AH/AL	Ano	
c0	Minimum relay stop time	Minutes	0 to 240	1	
c1	Operation relay 1	Range	dir/inv	Dir	
c2	Operation relay 2	Range	dir/inv	inv	
c3	Default relay 1	Range	Opn/Clo	Opn	
c4	Default relay 2	Range	Opn/Clo	Opn	
P0	Temperature scale selection	Range	ºC / ºF	F	
P1	Calibration water probe 1	Degrees	-20 to 20	0	
P2	Calibration water probe 2	Degrees	-20 to 20	0	
P3	Decimal Point	Option	no / yes	yes	
P4	Probe displayed	Option	sd1/sd2	sd1	
P5	Number of probes	Option	1 / 2	1	
H0	Factory reset values	Option	0	0	
H1	Keyboard protection	Option	no / yes	no	
H2	Operation led OUT1	Option	dir/inv	dir	
H3	Operation led OUT2	Option	dir/inv	dir	
H4	Address for serial communicate	Range	0 to 999	0	
H5	Access code to parameters	Range	0 to 999	0	
H6	Probe Type	Option	PTC / NTC	PTC	

Error Messages

In normal operation, the probe temperature will be shown. In case of alarm press the “SET” and the “DOWN” ▼ arrow buttons at the same time to quit the alarm. An error messages will be shown:

- **Err** – Memory error.
- **Erp** – Error of probe not shown on display.
- **AH1** – Maximum temperature alarm.
- **AL**1 – Minimum temperature alarm.
- **--** Shorted –circuited probe error
- **oo-** Open probe

OPERATION IN CASE OF ERROR

If the probe or thermostat memory should fail, the chiller and heater will turn off.

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Chiller or Heat Pump Maintenance

Heat Exchanger Cleaning:

The heat exchanger should be cleaned approximately every 12 months or as needed to allow proper performance. On some models this process may be done without removal of the heat exchanger shell. (i.e., water flushing system)

WARNING:

When using bleach and acid special care should be observed.
Always wear hand, eye and body protection. Use rubber gloves.

DO pour acid or bleach into the water. **DO NOT** pour water into acid or bleach solution. **DO NOT** perform acid and bleach flushing at the same time. The gas generated by the mixture is poisonous and can result in serious injury or death.

To remove organic deposits from titanium tube bundle without removing the shell:

1. Isolate the heat exchanger. (see drawing next page)
2. Mix 1 part bleach to 3 parts distilled water in 20 gallon tank or larger container.
3. Circulate via pump the solution through heat exchanger for approximately one to two hours or as needed.
4. Thoroughly rinse heat exchanger with clean water.

To remove mineral deposits from titanium tube bundle:
Use the same steps as above, but use muriatic acid instead of bleach. Be sure to follow the muriatic acid manufacturer's instructions for use and safety.



Water-cooled Condenser Cleaning:

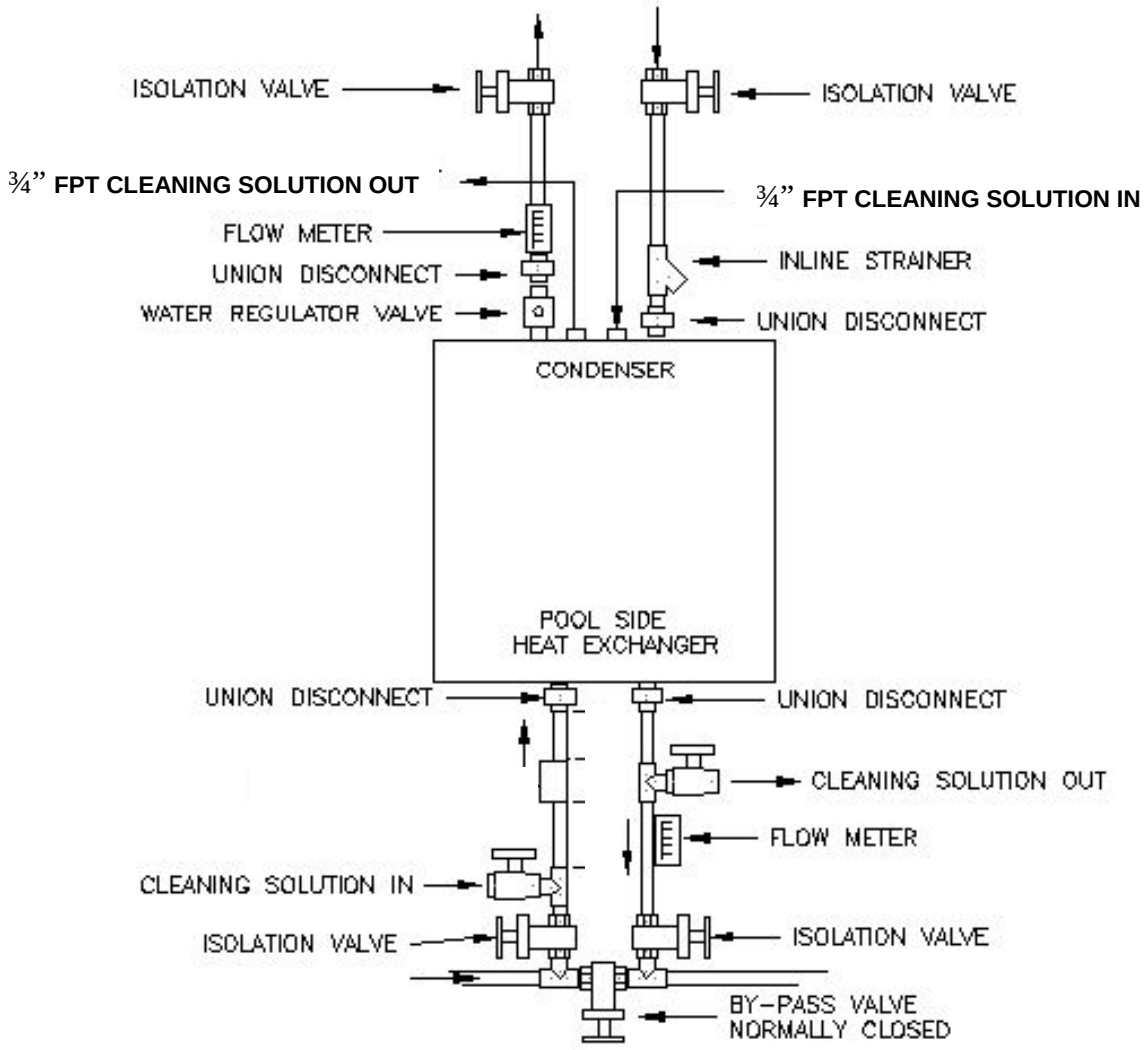
The condenser should be cleaned approximately every 12 months or as needed to allow proper performance.

Use mix of 1 part acid to 3 parts distilled water.
To remove mineral deposits:

1. Isolate condenser from water supply.
2. Remove threaded brass pipe plugs.
3. Connect recirculation flushing system to chiller / heat pump. (see drawing next page)
4. Circulate the cleaning solution for at least one hour
5. Flush condenser with clean water.
6. Install brass pipe fittings and check for water leaks.

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Chiller or Heat pump by-pass plumbing



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Troubleshooting Your Chiller

While your Aqua Logic chiller or heat pump has been designed and manufactured to provide years of reliable service, there may be an occasion where the unit does not operate correctly. The following chart provides guidelines to restore the unit to service or to provide information in helping us to diagnose and repair the chiller.

Items marked with an asterisk (*) should be performed only by Aqua Logic or a qualified electrical or refrigeration technician upon authorization from Aqua Logic. Call Aqua Logic **BEFORE** calling in a technician (See notes on the next page).

Chiller or Heat pump doesn't run.

Possible Cause	Possible Solution
Chiller is not connected to power.	Connect chiller to electrical supply.
There is no power to the chiller.	Reset circuit breaker or replace fuse.
Compressor does not operate.	Repair any loose wiring in chiller.*
Possible controller failure.	Replace controller

Chiller or heat pump runs but doesn't shut off and water temperature drops below setpoint.

Sensor not properly sensing the water temperature.	Check sensor position in dry sensor well. May be sensing air/ water mixture.
Controller not properly programmed	Program controller according to controller instructions.
Defective controller or sensor	Troubleshoot controller using controller instructions.

Chiller or heat pump appears to be running properly but water is not chilling or heating adequately.

Excessive mineral accumulation in condenser coil.	Remove accumulated minerals using procedure on page 8.
Inadequate water flow.	Make sure any filters ahead of chiller or heat pump are clean. Make sure pump is rated to provide proper flow. Make sure there are no kinks in the flexible hoses. Make sure there are no obstructions in the plumbing. Make sure that ice hasn't built up in heat exchanger or coil.
Excessive organic (slime) accumulation in heat exchanger or coil.	Remove accumulated organics using procedure on page 8.
Excessive mineral accumulation in heat exchanger or coil.	Remove accumulated minerals using procedure on page 8.
Refrigerant levels may be low.	Have refrigeration technician take pressure readings and inspect for leaks and recharge system in necessary.*
Other	Call Aqua Logic, Inc. for assistance.*

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Chiller or heat pump runs for a few minutes and shuts off (short cycles).

Controller indicator shows that controller is cycling chiller on and off.	Make sure controller sensor is installed fully in the sensor well in the heat exchanger. This can cause a false temperature reading.
Low or no water flow to condenser	

Controller indicates chiller or heat pump is "ON" but chiller or heat pump is shutting off (short cycles)**.**

Water temperature too high. (Heat exchanger)	Lower water temperature within normal range.
Defective compressor overload relay.	Replace compressor high-temp overload relay.*
Compressor doesn't run.	Replace defective compressor.*
Refrigerant levels may be low or gone.	Have refrigeration technician take pressure readings and inspect for leaks and recharge system in necessary.*
Compressor very noisy.	Have technician inspect for correct refrigerant pressures.*

Controller indicates chiller or heat pump is "ON" but chiller or heat pump is off.

Three phase monitor has fault displayed.(If equipped)	See instructions for fault explanation.
High pressure cutout trip.	Low or no water flow to condenser. Check water flow and reset pressure switch. (see picture below)
Heat exchanger flow switch trip. Water flow to heat exchanger low or off.	Make sure any filters ahead of chiller or heat pump are clean. Make sure pump is rated to provide proper flow. Make sure there are no kinks in the flexible hoses. Make sure there are no obstructions in the plumbing. Make sure that ice hasn't built up in heat exchanger or coil.
Low pressure cutout trip. Refrigerant levels may be low or gone.	High/low pressure cutout has disconnected the power. Have refrigeration technician take pressure readings and inspect for leaks and recharge system as necessary.*

Notes:

We recommend that you call Aqua Logic **(858) 292-4773** for technical assistance **BEFORE** attempting any repairs on your chiller.

In accordance with our published warranty, Aqua Logic will not pay for repairs or service on any of our chillers (in or out of warranty) without prior approval in writing or a verbal Repair Authorization (RA) issued by Aqua Logic, Inc.

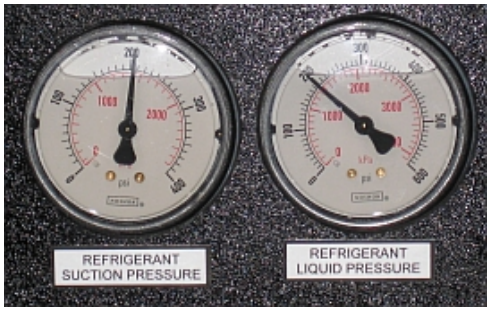


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Hi / Low refrigerant pressure cutout switch

The pressure switch serves a both a high and low refrigerant safety cutout to protect the chiller. If there is no water or low water flow through the condenser the pressure will build-up and cause the switch to trip off. Also, when there a refrigerant leak, the switch will protect the chiller from functioning.

To reset the switch:



1. Check liquid and suction refrigerant gauges to see which one is causing the pressure switch to cutout.
2. Locate the hole on the clear cover.
3. Insert finger in the hole and press the brass button. (See Chiller Trouble Shooting Chart Page 11)



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TROUBLE SHOOT INDICATOR LIGHTS

● Voltage Monitor ● HI / Low Pressure ● Pool Flow switch ● Cycle ● Power 	Check for main power disconnect or power switch.
● Voltage Monitor ● HI / Low Pressure ● Pool Flow Switch ● Cycle ☼ Power 	Check voltage monitor for faults or settings.
☼ Voltage Monitor ● HI / Low Pressure ● Pool Flow Switch ● Cycle ☼ Power 	Check HI / LOW Refrigerant pressure cutout switch. Maybe low on refrigerate or high condenser water temperature or no water flow. Check pressure gauges for low refrigerant charge. Once problem is fixed, push the reset button on the front of the switch.
☼ Voltage Monitor ☼ HI / Low Pressure ● Pool Flow Switch ● Cycle ☼ Power 	Check for the required pool water flow rate through unit. If the water rate is below the rating required the flow will turn the unit off.
☼ Voltage Monitor ☼ HI / Low Pressure ☼ Pool Flow Switch ● Cycle ☼ Power	Unit is functioning correctly. The amber CYCLE light will go on and off when compressor is cycling on and off. Check temperature controller to see if the Out1 is on the display. **Note: The unit has a 3 to 5 minute time delay before the unit will turn on between on /off cycles.**



Aqua Logic®, Inc.
9558 Camino Ruiz. • San Diego, CA 92126
Tel: (858) 292-4773 • Fax: (858) 279- 0537 • Email: info@aqualogicinc.com • www.aqualogicinc.com

CHILLER AND HEAT PUMP
LIMITED WARRANTY TERMS
(PLEASE READ CAREFULLY)**:**

All Aqua Logic Multi-temp Water-cooled Chillers and Titan Water-cooled Heat Pumps are warranted against defects and workmanship for a period of one (1) year from the date of original end-user purchase. The limited one year warranty covers only the parts and labor based upon Aqua Logic service cost and Aqua Logic is not liable for field repair work without prior written or verbal agreement with Repair Authorization (RA) number with a fixed maximum charge.

On split chiller and heat pump installations, Aqua Logic will not warranty refrigerate components and copper lines between condenser and heat exchanger.

The warranty applies only to the original purchaser and is not transferable.

The warranty covers only the repair or replacement of Aqua Logic products and is limited to Aqua Logic's cost of defective parts.

Once Aqua Logic determines that the defect is due to parts or workmanship and that the product is under warranty, Aqua logic will repair or replace the product solely at their discretion.

Our warranty does not include the following:

- Damage caused by freezing, inadequate or no water flow.
- Damage caused by improper installation or maintenance by user or their agent.
- Damage caused due to misapplication of the product.
- Damage caused by corrosion, abuse, accident, alteration or improper use.
- Damage caused by flood, fire, earthquake, tornado or other acts of God.
- Damage caused by electrical spikes, surges, brownouts or improper voltage or amperage.
- Damage caused by failure of any third party equipment (ie., controller, pump, etc.)
- Incidental damage to other equipment, property or livestock.
- Damage caused by a refrigeration technician in the field with poor installation technique ie., incorrect refrigerant copper line size between condensing unit and heat exchanger, bad brazed copper joints and dirty copper lines.

In the event of a defect or failure of the product, immediately contact Aqua logic for assistance. Aqua Logic will at their discretion:

- Provide user-replaceable parts to restore the unit to proper operation.
- Provide a Repair Authorization (RMA) number with a specified dollar limit for a qualified technician to provide a field repair.
- Provide a Return Authorization (RMA) number to return the unit with original packaging to Aqua Logic, Inc., 9558 Camino Ruiz, San Diego, CA 92126 by prepaid freight. You need to include the serial number as well as proof of purchase and /or a copy of the original bill of sale along with the RMA number. COD shipments will be refused

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Chiller / Heat Pump Start-up

Customer / Job Name:			Location / Building / Exhibit				
Service Company Name			Service Tech Name				
			Phone / Cell no.				
			Email:				
Start-Up Date		Time:		Start		Finish	
Model No.			Manufactured Date:				
Serial No.							
Unit Run Volts / phase 1 or 3			L1-L2		L2-L3		L1-L3
Unit Run Amps			L1		L2		L3
Evaporator water flow rate			GPM				
Evaporator entering water temperature			(˚F)		PSIG		
Evaporator leaving water temperature			(˚F)		PSIG		
Condenser water flow rate			GPM				
Condenser entering water			(˚F)		PSIG		
Condenser leaving water			(˚F)		PSIG		
Refrigerant type							
Refrigerant Suction Side			PSIG		(˚F)		
Refrigerant Liquid Side			PSIG		(˚F)		
Superheat ˚F							
Comments:							

Start-up procedure:

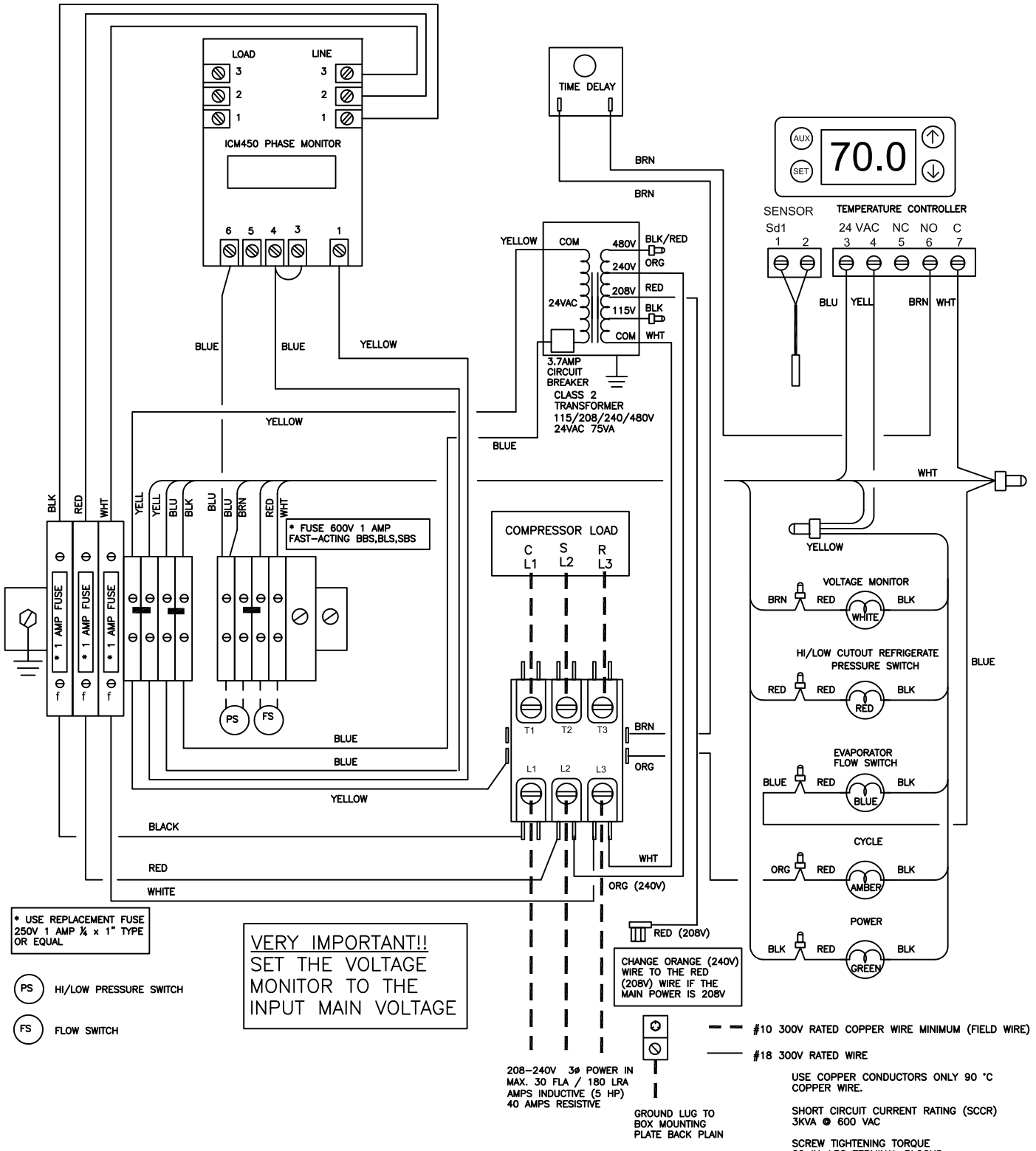
Caution: It's important to allow the oil in the compressor(s) to warm-up at least 24 hours before starting up the unit. If the ambient air temperature is below 60˚F, apply power to the unit and set controller so the compressor(s) do not energize or by-pass the heat exchanger water supply so the flow switch will not activate the unit.

1. Remove the cover of the unit. (If applicable)
2. Attach refrigeration suction and liquid hoses or use the gauges on unit. Attach an Amp / Volt meter to the unit.
3. Turn on water pump to heat exchanger (Evaporator) and the condenser.
   Note: (Make sure water flow rate is within published flow rate of the chiller / heat pump.)
4. Adjust the controller below the indicated water temperature to turn on the unit.
   (After 2-5 minutes the compressor should activate.)
5. Once the compressor(s) are running for approximately 15 minutes, record the information that's listed above.
6. For Heat Pumps, cycle the unit from chilling to heating to make sure the reversing valve is functioning correctly.

I certify that this unit above is functioning correctly at the time of start-up and is ready for operation.

Service Tech Sign		Customer Sign:		Date:	

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AQUA LOGIC, INC. 9558 Camino Ruiz, San Diego, CA 92126 Ph: 858.292.4773 Fax: 858.279.0537 www. *aqualogicinc.com*

TITLE	MT-WC-230V-3 CONTROL BOX FOR MODELS# MT-4-WC, MT-6-WC, MT-8-WC CHILLERS	PROJECT	AQUA LOGIC	FILE	C:\Users\cepps\Documents\AutoCad Files\MT Chillers\MT wiring\MT WC Electrical\MT-4-WC thru MT-8-WC 230V 3PH 10-11-19.dwg	DRAWING NO	00	EDITED	6/18/2020	SCALE	1:1
		CLIENT	AQUA LOGIC			DRAWN BY	CE	CREATED	7/18/2019	PAGE	1 of 1

ICM450

Programmable Three Phase Voltage Monitor with 25-Fault Memory

Protects motors from premature failure and burnouts



Installation, Operation & Application Guide

For more information on our complete range of American-made products – plus wiring diagrams, troubleshooting tips and more, visit us at **www.icmcontrols.com**

Specification

Input
- **Line Voltage:** Universal, 190-630 VAC
- **Frequency:** 50-60 Hz
- **Load Side Monitoring:** Optional
- **Control Voltage:** 18-240 VAC
- **Frequency:** 50-60 Hz

Output
- **Type:** Relay, SPDT
- **Voltage Range:** 240VAC @ 10A maximum
- **Frequency:** 50-60 Hz

Control Operating Temperature
- **Operating Temperature:** -40ºF to +167ºF (-40ºC to +75ºC)
- **Storage Temperature:** -40ºF to +185ºF (-40ºC to +80ºC)

LCD Operating Temperature
- **Operating Temperature:** -4ºF to +167ºF (-20ºC to +75ºC)

Mechanical
- **Mounting:** Surface mount using (2) #8 screws
- **Terminations:** Screw terminals
- **Weight:** 12 ounces (341 grams)

Dimensions
- 6 1/2" L, 4 1/4" W, 1 3/8" H (16.5 cm. L, 10.8 cm. W, 3.5 cm. H)

Parameters

Phase Unbalance Protection
- **Voltage Unbalance:** 2-20% adjustable

Over/Under Voltage Protection
- **Under Voltage:** 2-25% adjustable
- **Over Voltage:** 2-25% adjustable

Phase Loss Protection
- **Phase Loss Condition:** Equals 25% of nominal for any given phase; system will shut down and a fault will be recorded should this occur

Delay on Break Timer
- **Control Voltage:** 18-240 VAC
- **Time Delay:** 0 to 10 minutes adjustable

Fault Interrogation Delay
- **Time Delay:** 0 to 15 seconds adjustable
- Provides a delay between fault detection and system shutdown - helps to eliminate nuisance trips or unnecessary shutdowns

Caution

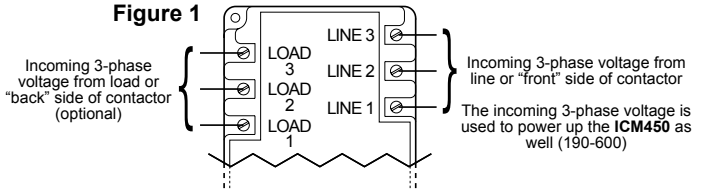
Installation of the ICM450 shall be performed by trained technicians only. Adhere to all local and national electric codes.

Disconnect all power to the system before making any connections.

Installation

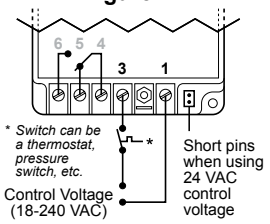
1. Using (2) #8 screws, mount the **ICM450** in a cool, dry, easily accessible location in the control panel.
2. Connect voltage as shown in Figure 1 (below). Leave existing line and load side connections intact on the contactor.
3. Load side monitoring is optional (unit may be used to monitor line side only). Wire the contactor and optional control voltage monitoring as in Figures 2 and 3 (below).
   ⁂ **Note:** *Load/line wire must be rated for 3-phase voltage rating, 20ga minimum.*
4. Upon application of power, the **ICM450** will be on line and will begin to monitor the system.

Figure 1



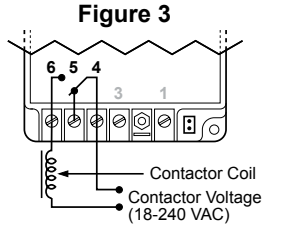
- Terminals 1 and 3 are the control signal input terminals
- "Control Mode" is turned ON or OFF in setup
- With "Control Mode" set to "ON," there must be a voltage present on terminals 1 and 3 for the relay output terminals 4 and 6 to close; this voltage can be supplied from a thermostat, pressure switch, etc.
- When the voltage on these terminals is re-applied, the unit will not re-energize until the delay on break (0-10 minutes) time has elapsed
- Use of terminals 1 and 3 is optional; they will be ignored if the "Control Mode" is set to "OFF"

Figure 2



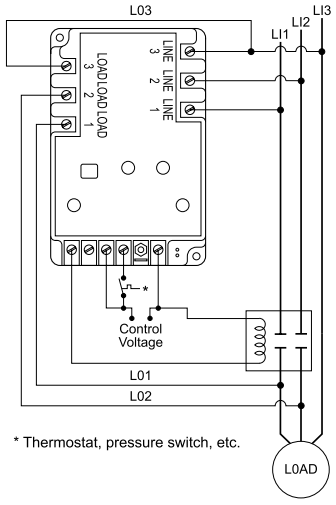
- Terminals 4 and 6 are "dry," normally open contacts
- Terminals 4 and 6 are closed when power is within specifications
- Terminals 4 and 6 open when there is a fault condition
- Terminals 4 and 6 open when there is a loss of the control signal with "Control Mode" set to "ON"

Figure 3

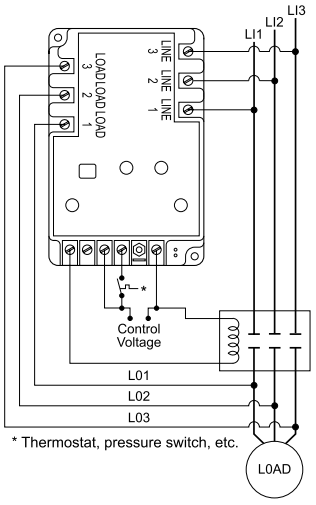


ICM450 Wiring Diagrams

2-Pole Contactor



3-Pole Contactor



Setting the Parameters

1. Press the green SETUP button to enter Setup mode. Setup LED will light.
2. Use the ∨ and ∧ arrows to change user parameters.
3. Scroll through setup by pressing and releasing the SETUP button.
4. When the last parameter has been set, the phase average will be displayed and the Setup LED will automatically turn OFF.

Button Functions

Press arrows to scroll through and select user parameter settings in Setup mode. HOLD down for fast edit.	Press to enter Setup mode and select user parameters.	Hold for voltage display a → b, b → c, a → c (simultaneously).	Press to read faults. Hold for 5 seconds to clear faults and reset memory.

Parameter	Description	Range	Default	Recommended
Line Voltage	Average phase to phase line voltage	190-600	208	Nameplate Voltage
Delay On Break	Amount of time between the load de-energizing and re-energizing	0-10 minutes	.1 minute	4 minutes**
Fault Interrogation	Amount of time before the load de-energizes due to a non-critical fault*	0-15 seconds	15 seconds	7-8 seconds**
% Over/Under Voltage	Maximum/minimum phase to phase average voltage, respectively	2-25%	20%	12-15%**
% Phase Unbalance	Amount of allowable voltage unbalance	2-20%	20%	4-5%**
Reset Mode	AUTO or number of times the load can be re-energized after a load side fault before a manual reset is necessary ⁂ **Note:** *When monitoring line side only, the reset mode will always be AUTO*	AUTO, 0-10	AUTO	AUTO
Control Mode	With control mode set to OFF, the load will energize if no 3- phase fault conditions exist; with control mode ON, the load will energize if no fault conditions exist and control voltage is present at terminals 1 and 3 of the **ICM450**	ON or OFF	ON	Based on wiring

* Non-critical faults are faults such as High/Low Voltage and Phase Unbalance. Critical faults, such as Phase Loss and Phase Reversal, have a fault interrogation of under 2 seconds and it is not user adjustable.

** For best recommendations, consult manufacturer of equipment.

Fault Conditions

Press and release fault button to scroll through all saved faults.

⁂ **Note:** *For initial setup, press and hold FAULT for 5 seconds to remove any previously stored faults.*

Fault	Problem	Corrective Action
Back Phase Loss	Not all three of the phases on the load side are present	1. Re-energize the contactor. 2. If the fault reappears after the load energizes: a. Turn all power OFF b. Check all load side connections c. Check the contacts of the contactor for debris or excess carbon.
Back Phase Rev	Loads 1, 2, or 3 are not in sequence (not 120º phase shifted)	1. Turn OFF all power. 2. Swap any 2 phases on the load side of the **ICM450** only (example: swap load 1 and load 2) * 3. Re-apply power.
Back Phase Unbalance	A voltage unbalance between the three load phases exceeds the unbalance setpoint	1. Press the **READ** button to observe the present load voltages. Check system for unbalance cause. 2. Increase the fault interrogation time if necessary. 3. Increase the percent unbalance setting if necessary.
Front Over Voltage	Average phase-phase voltage exceeds the maximum percentage	1. Check system for over-voltage cause. 2. Increase the percent over-voltage setting if necessary. 3. Increase the fault interrogation time if necessary.
Front Phase Loss	Not all three of the phases on the line side are present	1. Press and hold the **READ** button on the phase monitor or use an AC voltmeter to carefully measure all three phase-phase line voltages (***example:*** Line 1 ➔ Line 2, Line 2 ➔ Line 3, Line 3 ➔ Line 1). 2. Repair the missing phase.
Front Phase Reversal	Lines 1, 2, or 3 are not in sequence (not 120º phase shifted)	1. Turn OFF all power. 2. Swap any 2 phases on the line side of the **ICM450** (example: swap Line 1 and Line 2)* 3. Re-apply power.
Front Phase Unbalance	A voltage unbalance between the three line phases exceeds the unbalance setpoint	1. Press the **READ** button to observe the present load voltages. Check system for unbalance cause. 2. Increase the fault interrogation time if necessary. 3. Increase the percent unbalance setting if necessary.
Front Under Voltage	Average phase-phase voltage is below the minimum percentage	1. Check system for under-voltage cause. 2. Increase the percent under-voltage setting if necessary. 3. Increase the fault interrogation time if necessary.

* **Only** swap phases during initial setup, **not** after the **ICM450** has been in operation without errors.

Troubleshooting

Problem	LCD Readout	LED Status	Corrective Action
Load will not energize	Phase Avgerage	All LEDs Off	Confirm that the control input (terminals 1 & 3) is properly connected and configured
Load will not energize	Phase Avgerage	Load LED Off, Fault LED blinking	Press **FAULT** once to observe the current fault; correct the condition of the first fault that appears (see Fault Conditions above, for a list of corrective actions)
Fault LED blinks repeatedly while load is energized	Phase Avgerage	Fault LED Blinking, Load LED On	Indicates there are faults saved in the memory, press **FAULT** rapidly to scroll through saved faults; to clear the faults, press and hold **FAULT** for more than 5 seconds
Load will not de-energize when control voltage is OFF	Phase Avgerage	Load LED On, Control LED Off	The control mode setting is OFF; press **SETUP** to get to the control mode. Press ^ to set the control mode ON
Setup LED is on while load is being energized	Anything Other Than Phase Avgerage	Setup LED On, Load LED On	To exit the setup mode, press either **READ** or **FAULT**
Load will not energize	Reset	Fault LED Blinking	Unit in lockout; maximum number of retries in manual reset mode has been reached; to reset unit, press **FAULT** and hold for more than 5 seconds
Load turns ON and OFF repeatedly	Readout is Irrelevant	Fault LED Blinking	Fix load side fault; press **FAULT** to observe condition; the delay on break period may be too short; press **SETUP** to enter the delay on break mode; press ^ to lengthen the delay

ONE-YEAR LIMITED WARRANTY

The Seller warrants its products against defects in material or workmanship for a period of one (1) year from the date of manufacture. The liability of the Seller is limited, at its option, to repair, replace or issue a non-case credit for the purchase prices of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller's instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined by Seller to be non-defective are subject to a $30.00 per hour inspection fee. This warranty constitutes the Seller's sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.

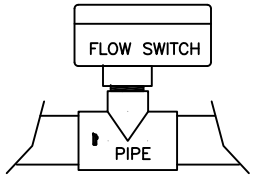
ICM CONTROLS™

Patent No. 424,953

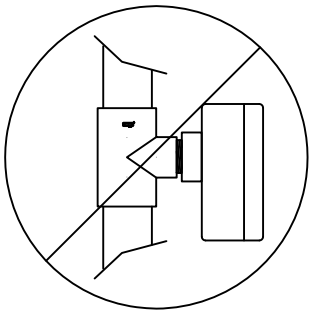
7313 William Barry Blvd., North Syracuse, NY 13212

(**Toll Free**) 800-365-5525 (**Phone**) 315-233-5266 (**Fax**) 315-233-5276

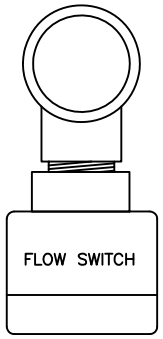
www.icmcontrols.com



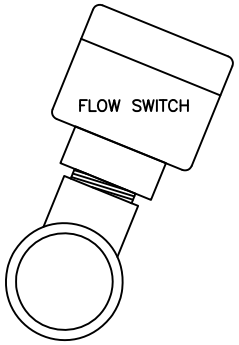
YES



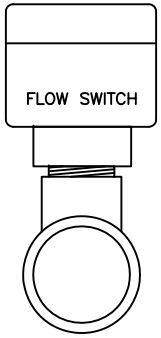
DO NOT MOUNT VERTICALLY



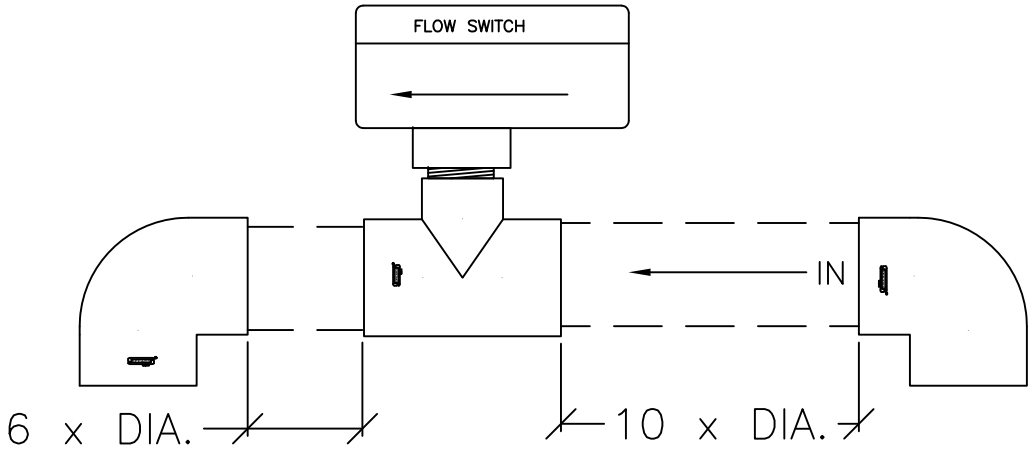
NO



NO



YES



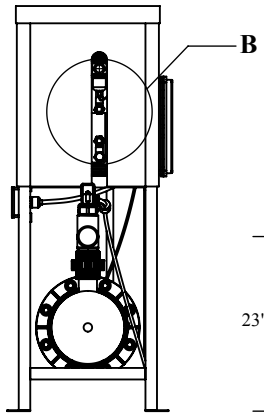
INSTALLATION NOTE:

"FLOW CONTROL" FLOW SWITCH AND TEE FITTING IS FIELD INSTALLED ON TOP OF A HORIZONTAL STRAIGHT PIPE WITH NO LESS THAN 10 TIMES THE DIAMETER OF STRAIGHT ON THE INLET SIDE AND NO LESS THAN 6 TIMES THE DIAMETER ON THE OUTLET SIDE

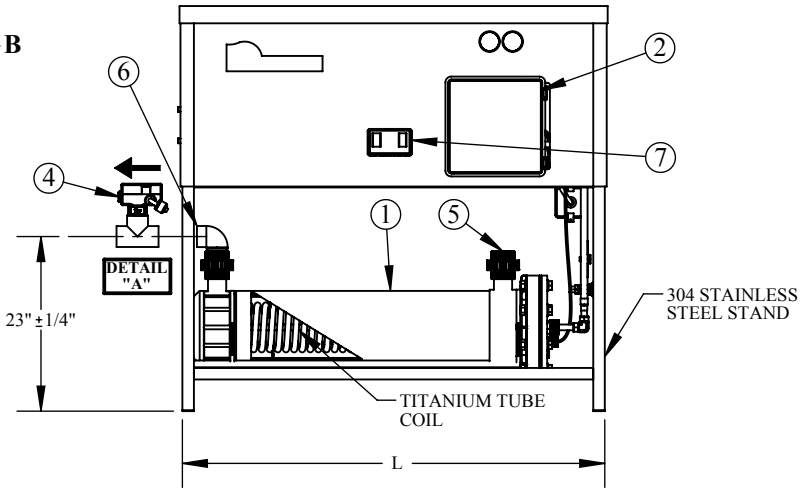
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		CLIENT	AQUA LOGIC INC			DRAWN BY	CEPPS	CREATED	4/24/2013	PAGE	1 of 1

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SAN DIEGO, CA 92126

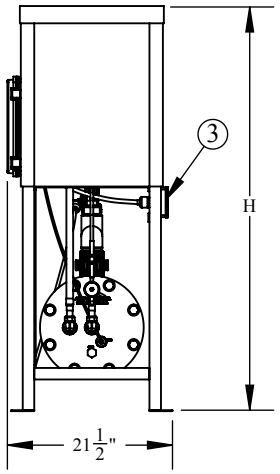
MT-1 THRU MT-8 WATER COOLED WATER CHILLER



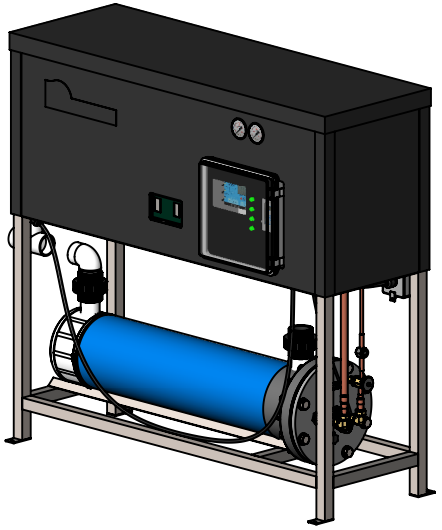
LEFT VIEW



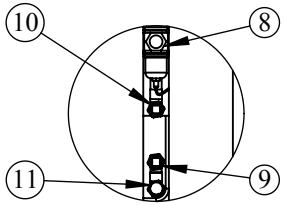
FRONT VIEW



RIGHT VIEW

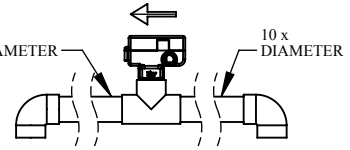


NO.	NAME
1	EVAPORATOR-TITANIUM TUBE / 8" SCH 40 PVC SHELL
2	TEMPERATURE CONTROLLER / NEMA 4X ELECTRICAL CONTROL BOX
3	JUNCTION BOX FOR SUPPLY POWER
4	WATER FLOW SWITCH (SEE NOTE FOR INSTALLATION)
5	2" NPS EVAPORATOR WATER INLET
6	2" NPS EVAPORATOR WATER OUTLET
7	LOW / HI REFRIGERANT PRESSURE SAFETY CUTOUT
8	CONDENSER WATER OUTLET
9	CONDENSER WATER INLET
10	CONDENSER WATER FLUSH OUTLET
11	CONDENSER WATER FLUSH INLET



DETAIL B

NOTES:
· WATER STOPS FLOWING THROUGH THE CONDENSER WHEN THE CHILLER IS IN THE OFF CYCLE.
· WATER FLOW RATE THROUGH THE EVAPORATOR NEEDS TO BE AT THE MAXIMUM FLOW RATE WHEN WATER TEMPERATURE IS 55°F AND BELOW.



**** IMPORTANT!**
-DETAIL "A"
-FLOW SWITCH MUST BE FIELD INSTALLED VERTICALY ON A HORIZONTAL STRAIGHT PIPE WITH NO LESS THAN 10 TIMES THE PIPE DIAMETER ON THE INLET SIDE AND NO LESS THAN 6 TIMES THE DIAMETER ON THE OUTLET SIDE.

MULTI-TEMP WATER-COOLED CHILLERS													
MODEL NO.	NOMINAL TONS / BTUH	VOLTS / PHASE	R-410A REFRIGERANT CHARGE LBS / OZ	AMPS RLA / LRA	EVAPORATOR WATER FLOW MIN/MAX *(GPM)	CONDENSER WATER FLOW MIN/MAX *(GPM)	CONDENSER WATER CONNECTIONS SIZE (FPT)	L	H	DRY WEIGHT (LBS.)	SHIPPING WEIGHT (LBS.)	SHIPPING DIMS
MT-1-WC	2 / 24,000	208-240 / 1	3 / 5	13.8 / 127	20 / 40	2 / 4	1/2"	43"	53"	320	415	49" x31" x 60"
MT-3-WC	3 / 36,000	208-240 / 1	3 / 10	16.6 / 175	20 / 40	2 / 5	1/2"	43"	53"	330	430	49" x 31" x 60"
MT-4-WC	3 / 36,000	208-240 / 3	3 / 10	12.7 / 128	20 / 40	2 / 5	1/2"	43"	53"	330	430	49" x 31" x 60"
MT-4-460-WC	3 / 36,000	460 / 3	3 / 10	7.5 / 63	20 / 40	2 / 5	1/2"	43"	53"	330	430	49" x 31" x 60"
MT-5-WC	4 / 48,000	208-240 / 1	4 / 12	17.3 / 129	30 / 60	3 / 7	3/4"	55"	53"	350	450	62" x 31" x 60"
MT-6-WC	4 / 48,000	208-240 / 3	4 / 12	13 / 156	30 / 60	3 / 7	3/4"	55"	53"	350	450	62" x 31" x 60"
MT-6-460-WC	4 / 48,000	460 / 3	4 / 12	8 / 75	30 / 60	3 / 7	3/4"	55"	53"	350	450	62" x 31" x 60"
MT-7-WC	5 / 60,000	208-240 / 1	7 / 5	23 / 129	30 / 60	4 / 8	3/4"	55"	53"	360	460	62" x 31" x 60"
MT-8-WC	5 / 60,000	208-240 / 3	7 / 5	19.3 / 225	30 / 60	4 / 8	3/4"	55"	53"	360	460	62" x 31" x 60"
MT-8-460-WC	5 / 60,000	460 / 3	7 / 5	9.8 / 114	30 / 60	4 / 8	3/4"	55"	53"	360	460	62" x 31" x 60"

OPTIONS:
· SCH 80 PVC SHELL CONSTRUCTION.
· 316 STAINLESS STEEL STAND AND HEX BOLTS.

· ALL UNITS ARE 60 HZ.
*CONDENSER FLOW RATE IS BASED ON A MINIMUM OF 55°F AND MAXIMUM OF 75°F WATER TEMPERATURE. CONSULT WITH THE FACTORY IF THE WATER TEMPERATURE IS OUTSIDE THESE PARAMETERS.
· ALL DIMENSIONS ARE APPROXIMATE AND CAN CHANGE AT ANY TIME.

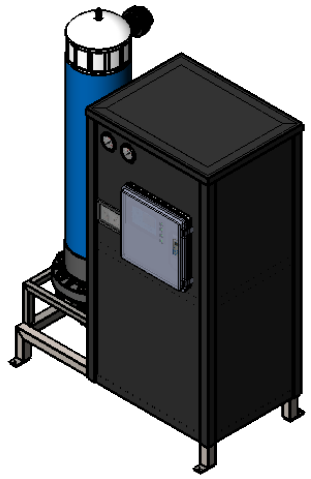
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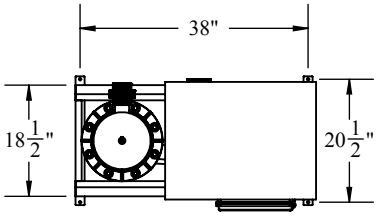
DESCRIPTION	DRAWING #	SHEET TITLE
MT-1 THRU MT-8 WATER COOLED WATER CHILLER	PDF-0060	MT-1 THRU MT-8 SPECIFICATIONS

DRAWN BY	DATE	REVISION	SCALE	SHEET #
Arnaldo Guzman	2/5/2016		1:25	1 OF 1

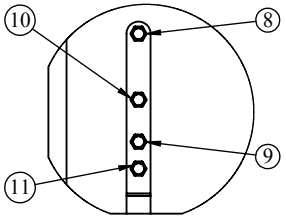
MT-1 THRU MT-8-WCV WATER COOLED CHILLER



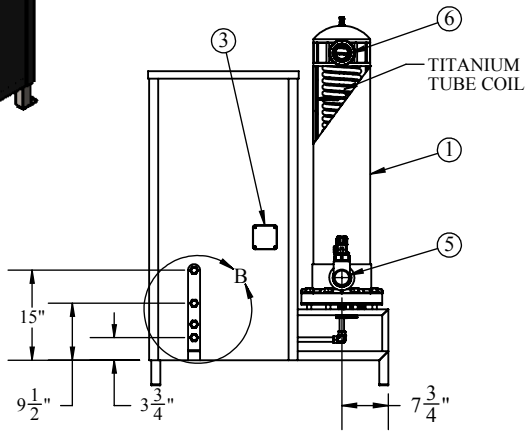
NO.	NAME
1	EVAPORATOR-TITANIUM TUBE / 8" SCH 40 PVC SHELL
2	TEMPERATURE CONTROLLER / NEMA 4X ELECTRICAL CONTROL BOX
3	JUNCTION BOX FOR SUPPLY POWER
4	WATER FLOW SWITCH (SEE NOTE FOR INSTALLATION)
5	2" NPS SLIP UNION EVAPORATOR WATER INLET
6	2" NPS SLIP UNION EVAPORATOR WATER OUTLET
7	LOW / HI REFRIGERANT PRESSURE SAFETY CUTOUT
8	CONDENSER WATER OUTLET
9	CONDENSER WATER INLET
10	CONDENSER WATER CLEAN OUT OUTLET
11	CONDENSER WATER CLEAN OUT INLET
12	REFRIGERANT PRESSURE GAUGES



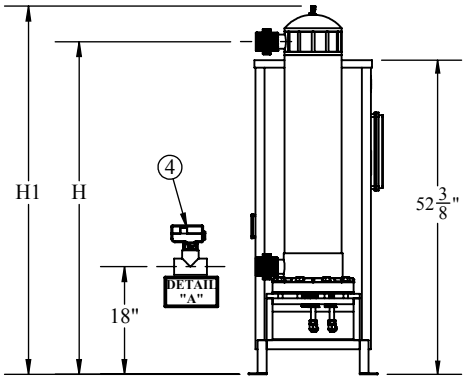
PLAN VIEW



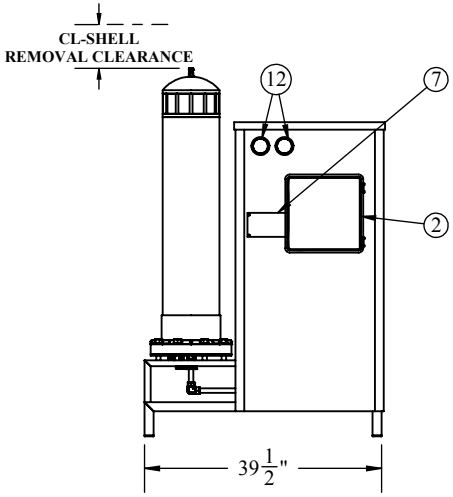
DETAIL B



BACK

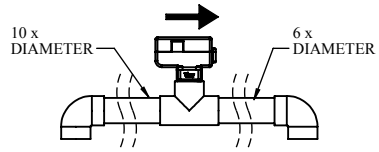


LEFT



FRONT

MULTI-TEMP WATER-COOLED CHILLERS											
MODEL NO.	NOMINAL TON / BTUH	VOLTS / PHASE	R-410A REFRIGERANT CHARGE LBS/OZ	AMPERAGE RLA / LRA	EVAPORATOR WATER FLOW MIN/MAX (GPM)	CONDENSER WATER FLOW MIN/MAX (GPM)	CONDENSER WATER CONNECTION (NFPT)	H	H1	CL	DRY WEIGHT (LBS.)
MT-1-WCV	2 / 24,000	208-240 / 1	3 / 5	13.8 / 127	20 / 40	2 / 4	1/2"	33"	n/a	25"	320
MT-3-WCV	3 / 36,000	208-240 / 1	3 / 10	16.6 / 175	20 / 40	2 / 5	1/2"	40"	n/a	32"	330
MT-4-WCV	3 / 36,000	208-240 / 3	3 / 10	12.7 / 128	20 / 40	2 / 5	1/2"	40"	n/a	32"	330
MT-4-460-WCV	3 / 36,000	460 / 3	3 / 10	7.5 / 63	20 / 40	2 / 5	1/2"	40"	n/a	32"	330
MT-5-WCV	4 / 48,000	208-240 / 1	4 / 12	17.3 / 129	30 / 60	3 / 7	3/4"	48"	54"	39"	350
MT-6-WCV	4 / 48,000	208-240 / 3	4 / 12	13 / 156	30 / 60	3 / 7	3/4"	48"	54"	39"	350
MT-6-460-WCV	4 / 48,000	460 / 3	4 / 12	8 / 75	30 / 60	3 / 7	3/4"	48"	54"	39"	350
MT-7-WCV	5 / 60,000	208-240 / 1	7 / 5	23 / 129	30 / 60	4 / 8	3/4"	55 1/2"	61 3/8"	47"	360
MT-8-WCV	5 / 60,000	208-240 / 3	7 / 5	19.3 / 225	30 / 60	4 / 8	3/4"	55 1/2"	61 3/8"	47"	360
MT-8-460-WCV	5 / 60,000	460 / 3	7 / 5	9.8 / 114	30 / 60	4 / 8	3/4"	55 1/2"	61 3/8"	47"	360



**** IMPORTANT!**
-DETAIL "A"
-FLOW SWITCH MUST BE FIELD INSTALLED VERTICALY ON A HORIZONTAL STRAIGHT PIPE WITH NO LESS THAN 10 TIMES THE PIPE DIAMETER ON THE INLET SIDE AND NO LESS THAN 6 TIMES THE DIAMETER ON THE OUTLET SIDE.

NOTES:
- WHEN THE CHILLER IS IN THE OFF CYCLE,WATER FLOWING THROUGH THE CONDENSER IS STOPPED.
- WATER FLOW RATE THROUGH THE EVAPORATOR NEEDS TO BE AT THE MAXIMUM FLOW RATE WHEN WATER TEMPERATURE IS 55°F AND BELOW.
- ALL UNITS ARE 60 HZ.
- CONDENSER FLOW RATE IS BASED ON A MINIMUM OF 55°F AND MAXIMUM OF 75°F WATER TEMPERATURE. IF OPERATING OUTSIDE THESE PARAMETERS CONTACT AQUA LOGIC TECHNICAL SUPPORT.
- ALL DIMENSIONS ARE APPROXIMATE AND CAN CHANGE AT ANY TIME.

OPTIONS:
- SCH 80 PVC SHELL CONSTRUCTION.
- 316 STAINLESS STEEL STAND AND HEX BOLTS.

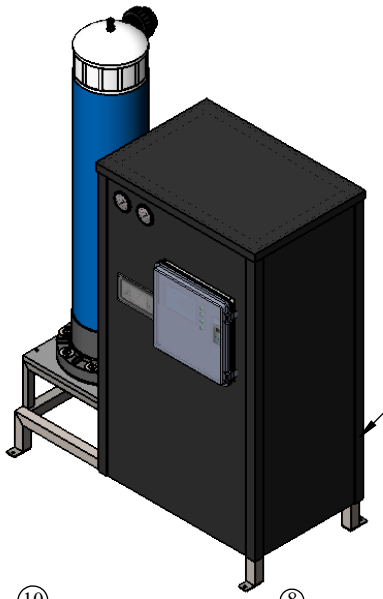
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DRAWING #	SHEET TITLE
PDF-0230	MT-1 THRU MT-8-WCV SPECIFICATIONS

DESCRIPTION				
MT-1 THRU MT-8-WCV WATER COOLED CHILLER.				
DRAWN BY	**DATE**	**REVISION**	**SCALE**	**SHEET #**
	11/11/2016			1 OF 1

MT-9-WC65V WATER COOLED CHILLER

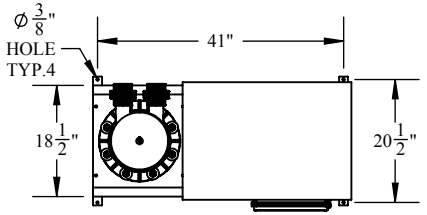


NO.	NAME
1	EVAPORATOR-TITANIUM TUBE / 8" SCH 40 PVC SHELL
2	TEMPERATURE CONTROLLER / NEMA 4X ELECTRICAL CONTROL BOX
3	JUNCTION BOX FOR SUPPLY POWER
4	WATER FLOW SWITCH (SEE NOTE FOR INSTALLATION)
5	2" NPS SLIP UNION EVAPORATOR WATER INLET
6	2" NPS SLIP UNION EVAPORATOR WATER OUTLET
7	LOW / HI REFRIGERANT PRESSURE SAFETY CUTOUT
8	CONDENSER WATER OUTLET
9	CONDENSER WATER INLET
10	CONDENSER WATER CLEAN OUT OUTLET
11	CONDENSER WATER CLEAN OUT INLET
12	REFRIGERANT PRESSURE GAUGES

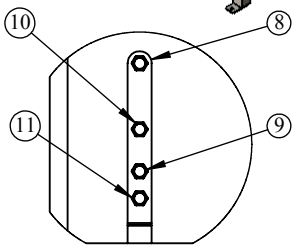
CONDENSER WATER FLOW @TEMPERATURE @ PRESSURE DROP @ 95°F LWT			WATER CONNECTION I / O SIZE
EWT (°F)	GPM	PD	(FPT)
40	4	3	1/2"
45	4.4	3	1/2"
50	4.9	6	1/2"
55	5.6	6	1/2"
60	6.4	4	1/2"
65	7.4	4	3/4"
70	8.9	5	3/4"
75	11.1	3	3/4"
80	14.9	4	3/4"
85	22.3	5	1"

EWT = ENTERING WATER TEMPERATURE.
LWT = LEAVING WATER TEMPERATURE.
PD = WATER PREASSURE DROP.

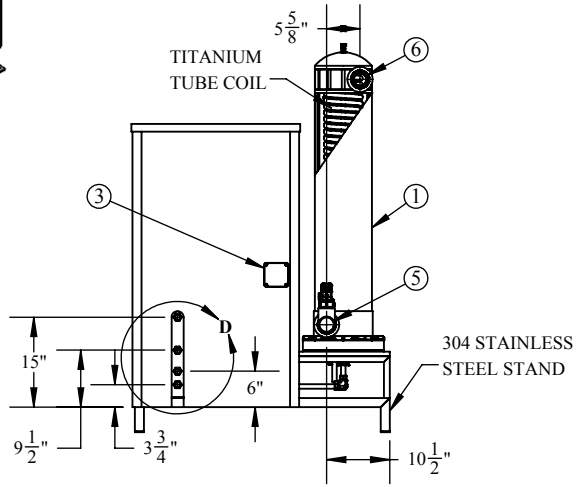
-CONDENSER WATER TEMPERATURES VS. FLOW RATE ARE APROXIMATE AND MAY VARY FROM THE CHART.
-GRAY AREA IS OUT OF THE NORMAL RANGE CONTACT AQUA LOGIC.



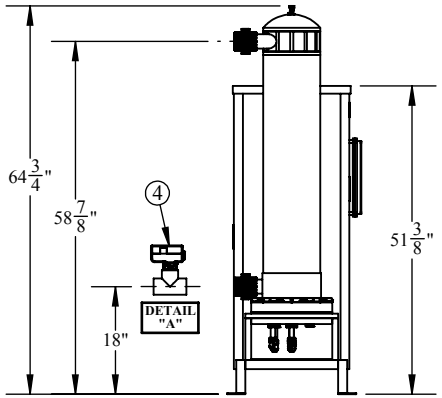
PLAN VIEW



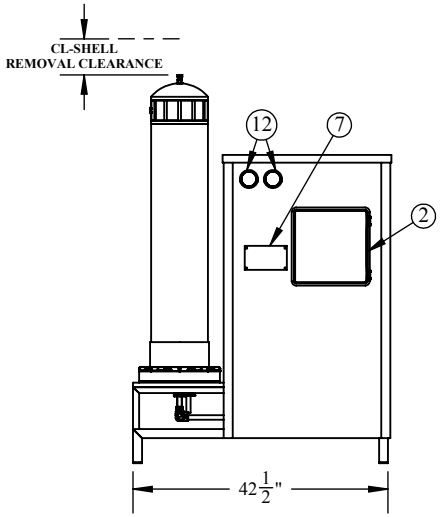
DETAIL B



BACK



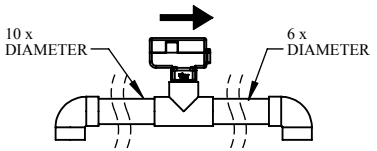
LEFT



FRONT

OPTIONS:
· SCH 80 PVC SHELL CONSTRUCTION.
· 316 STAINLESS STEEL STAND AND HEX BOLTS.

WATER-COOLED HEAT PUMP									
MODEL NO.	NOMINAL TON / BTUH	EER	VOLTS / PHASE / HZ.	R-410A REFRIGERANT CHARGE LBS/OZ	AMPERAGE RLA / LRA	MCA	MAX FUSE / BRK SIZE	EVAPORATOR WATER FLOW MIN/MAX (GPM)	DRY WEIGHT (LBS.)
MT-9-WC65V	7.5 / 90,000	18.5	208-240 / 3 / 60	4 / 12	17 / 164	39	40	60 / 80	350
MT-9-460-WC65V	7.5 / 90,000	18.5	460 / 3 / 60	4 / 12	8 / 100	19	25	60 / 80	350



**** IMPORTANT!**
-DETAIL "A"
-FLOW SWITCH MUST BE FIELD INSTALLED VERTICALY ON A HORIZONTAL STRAIGHT PIPE WITH NO LESS THAN 10 TIMES THE PIPE DIAMETER ON THE INLET SIDE AND NO LESS THAN 6 TIMES THE DIAMETER ON THE OUTLET SIDE.

NOTES:
· WHEN THE CHILLER IS IN THE OFF CYCLE,WATER FLOWING THROUGH THE CONDENSER IS STOPPED.
· WATER FLOW RATE THROUGH THE EVAPORATOR NEEDS TO BE AT THE MAXIMUM FLOW RATE WHEN WATER TEMPERATURE IS 55°F AND BELOW.
· CONDENSER FLOW RATE IS BASED ON A MINIMUM OF 55°F AND MAXIMUM OF 75°F WATER TEMPERATURE. IF OPERATING OUTSIDE THESE PARAMETERS CONTACT AQUA LOGIC TECHNICAL SUPPORT.
· ALL DIMENSIONS ARE APPROXIMATE AND CAN CHANGE AT ANY TIME.

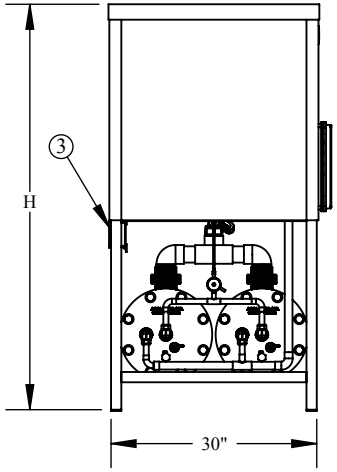
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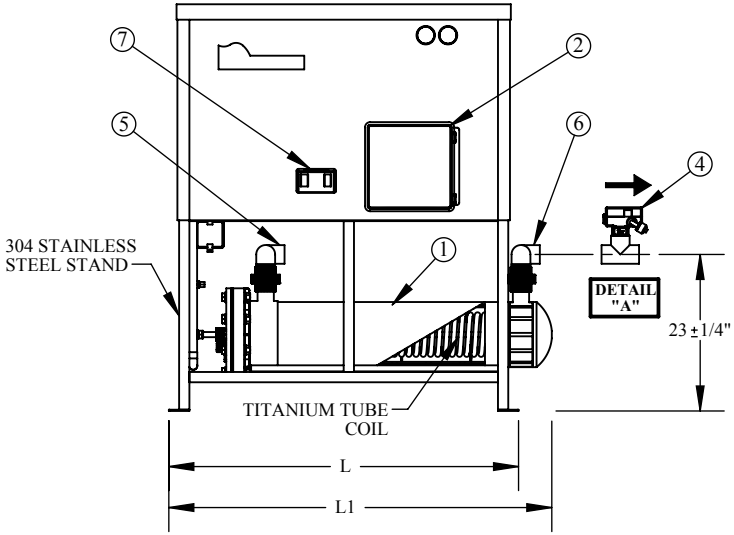
DRAWING #	SHEET TITLE
	MT-9-WC65V SPECIFICATIONS

DESCRIPTION				
MT-9-WC65V WATER COOLED CHILLER, VERTICAL MOUNT.				
DRAWN BY	DATE	REVISION	SCALE	SHEET #
	11/7/2016			1 OF 1

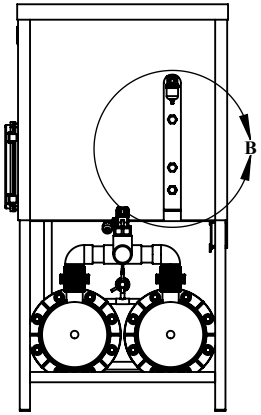
MT-9 THRU MT-10 WATER COOLED WATER CHILLER



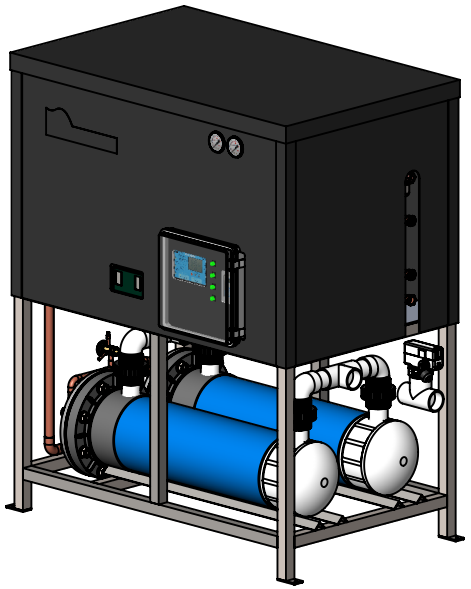
LEFT VIEW



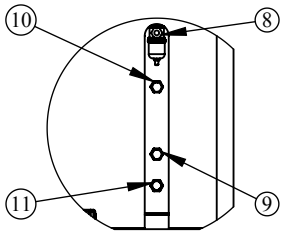
FRONT VIEW



RIGHT VIEW

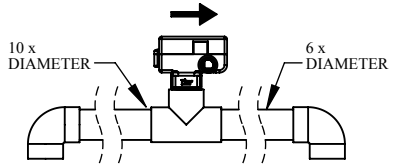


NO.	NAME
1	EVAPORATOR-TITANIUM TUBE / 8" SCH 40 PVC SHELL
2	TEMPERATURE CONTROLLER / NEMA 4X ELECTRICAL CONTROL BOX
3	JUNCTION BOX FOR SUPPLY POWER
4	WATER FLOW SWITCH (SEE NOTE FOR INSTALLATION)
5	2" NPS EVAPORATOR WATER INLET
6	2" NPS EVAPORATOR WATER OUTLET
7	LOW / HI REFRIGERANT PRESSURE SAFETY CUTOUT
8	CONDENSER WATER OUTLET
9	CONDENSER WATER INLET
10	CONDENSER WATER FLUSH OUTLET
11	CONDENSER WATER FLUSH INLET



DETAIL B

NOTES:
· WATER STOPS FLOWING THROUGH THE CONDENSER WHEN THE CHILLER IS IN THE OFF CYCLE.
· WATER FLOW RATE THROUGH THE EVAPORATOR NEEDS TO BE AT THE MAXIMUM FLOW RATE WHEN WATER TEMPERATURE IS 55°F AND BELOW.



**** IMPORTANT!**
-DETAIL "A"
-FLOW SWITCH MUST BE FIELD INSTALLED VERTICALY ON A HORIZONTAL STRAIGHT PIPE WITH NO LESS THAN 10 TIMES THE PIPE DIAMETER ON THE INLET SIDE AND NO LESS THAN 6 TIMES THE DIAMETER ON THE OUTLET SIDE.

MULTI-TEMP WATER-COOLED CHILLERS											
MODEL NO.	NOMINAL TONS / BTUH	VOLTS / PHASE	COMPRESSOR NO. / TONS	AMPS RLA / LRA	EVAPORATOR WATER FLOW MIN / MAX *(GPM)	*CONDENSER WATER FLOW (GPM) / PSI DROP @ 65°F ENTERING	CONDENSER WATER CONNECTIONS SIZE (FPT)	L	L1	H	SHIPPING DIMS
MT-9-WC	7.5 / 90,000	208-240 / 1	1 / 7.5	25 / 164	60 / 120	7 / 4	3/4"	51"	n/a	59"	59" x 37" x 68"
MT-9-460-WC	7.5 / 90,000	460 / 3	1 / 7.5	13 / 100	60 / 120	7 / 4	3/4"	51"	n/a	59"	59" x 37" x 68"
MT-10-WC	10 / 120,000	208-240 / 3	1 / 10	36 / 240	60 / 120	9 / 4	1"	51"	56"	59"	64" x 37" x 68"
MT-10-460-WC	10 / 120,000	460 / 3	1 / 10	17 / 114	60 / 120	9 / 4	1"	51"	56"	59"	64" x 37" x 68"

OPTIONS:
· SCH 80 PVC SHELL CONSTRUCTION.
· 316 STAINLESS STEEL STAND AND HEX BOLTS.

· ALL UNITS ARE 60 HZ.
*CONDENSER FLOW RATE IS BASED ON A MINIMUM OF 55°F AND MAXIMUM OF 75°F WATER TEMPERATURE. CONSULT WITH THE FACTORY IF THE WATER TEMPERATURE IS OUTSIDE THESE PARAMETERS.
·ALL DIMENSIONS ARE APPROXIMATE AND CAN CHANGE AT ANY TIME.

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DESCRIPTION	DRAWING #	SHEET TITLE
MT-9 THRU MT-10 WATER COOLED WATER CHILLER		MT-9 THRU MT-10-WC SPECIFICATIONS

DRAWN BY	DATE	REVISION	SCALE	SHEET #
Arnaldo Guzman	2/5/2016			1 OF 1