PROCESS WATER CHILLER

MODELS 8500, 8501, 8550, 8551

Shown with option #8510 stacking stand.

UNI*TROL* ELECTRONICS, INC.
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WARRANTY

PARTS: Unitrol warrants this chiller to be free of defects in *materials* that effect operation, for a period of one year from date of shipment from factory, if said equipment has not been altered or abused by customer and is being used for the purpose that the equipment was designed for. Parts will be shipped, FOB Northbrook, Illinois. Defective parts will be returned to Unitrol at customer's expense when so requested by Unitrol.

LABOR: Necessary warranty labor is covered for a period of 90 days from the date of shipment from factory, if said equipment has not been altered or abused by customer and is being used for the purpose that the equipment was designed for. Parts will be replaced or repaired, at manufacturer's option on any parts found to be defective. Unitrol shall not, without its prior written approval, be liable for any costs involved in field repairs. Transportation of equipment to or returning from Unitrol shall be at customer's expense.

Alternately, Unitrol may elect to send a local refrigeration contractor to do warranty service. In this case, Unitrol will pay contractor directly.

To be covered by this warranty, please follow the following procedure:

1. **Contact the Unitrol service department at 847-480-0115 to discuss the problem you are having with this chiller.**
2. **If Unitrol concurs that this is a warranty issue, and the chiller is <u>more</u> than 90 days from date of factory shipment, a Unitrol representative will either arrange to have a replacement part shipped, or authorize a locally purchased replacement at a pre-agreed price that will be reimbursed by Unitrol.**
3. **If Unitrol concurs that this is a warranty issue, and the chiller is <u>less</u> than 90 days from date of factory shipment, a Unitrol representative will have a factory approved service technician dispatched to make repairs under the above terms. Alternately, the Unitrol representative will direct that the chiller be returned to the factory for repairs.**

No other warranty, either written or implied, shall cover this equipment, and Unitrol shall not be liable for any damage caused to other equipment or personnel due to failure of this product. Unitrol reserves the right to change specifications at any time.

UNI*TROL* PROCESS WATER CHILLER

Thank you for purchasing this Unitrol process water chiller. It was manufactured with pride in our Northbrook, Illinois factory. Unitrol also manufactures the Unitrol line of RESISTANCE WELDING CONTROLS. This line includes controls that include safety systems to protect the welding machine operator, as well as quality control features that allow you to produce a large volume of weldments that will match the highest quality requirements.

This Unitrol water chiller has been designed to operate under the most severe industrial conditions. Please observe the installation instructions to be sure that this chiller will provide years of superior service.

MODEL NUMBER:

SERIAL NUMBER:
DATE OF MANUFACTURE:
REFRIGERANT: 407C
OPTIONS:

CHILLER MODEL	LINE VOLTAGE AND PHASE	STANDARD WATER PUMP
8500 / 25 tons	480/3	5 HP, 180GPM @35PSI
8501 / 25 tons	230/3	5 HP, 180GPM @35PSI
8550 / 30 tons	480/3	7-1/2HP, 230GPM @35PSI
8551 / 30 tons	230/3	7-1/2 HP, 230GPM 35PSI

This model chiller is supplied in three MODULES:

MODULE A = Main module with water pump, compressor 1, and control panel

MODULE B = Remote module with water tank and compressor 2

MODULE C = Remote module with compressor 3
Field connection of electrical and water circuits is required. All wires and hosing is provided for this interconnection.

INCLUDED IN SHIPMENT:
1 = Phase rotation tester
1 = 2” copper pipe with union for connection of tank to water pump intake
1 = Water return Y-strainer/filter

NOTES

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UNITROL MODEL 8500, 8501, 8550, 8551

THIS CHILLER IS DESIGNED FOR INSIDE INSTALLATION. ONLY CHILLERS PURCHASED WITH THE –OS (OUTSIDE) KIT CAN BE INSTALLED OUTSIDE IN AREAS WHERE THE AIR TEMPERATURE CAN FALL BELOW 45ºF, AND SUCH INSTALLATION WILL VOID THE WARRANTY.

1. Carefully uncrate all modules and inspect for external damage. If any damage is seen, do not continue until a representative of the freight company views the damage, and a claim to the freight company has been filed.
2. Install the chillers in a location that will keep the air intake (back of chiller with air filter) and air exhaust (front of chiller with expanded metal plate) **at least 36”** from the nearest wall. This is required to allow maximum air movement over the condenser coil.
    a. Install the MAIN module A (with the temperature controls) on the left, and the REMOTE modules on the right. **Keep a space of about 24” between the modules.**
    b. If the optional **STACKING STAND** has been shipped with this system, assemble the stand as shown on page 23. Then place the stand over MODULE A and put MODULE C on top. The stacking stand has pockets to receive leg pads on MODULE C.

FAILURE TO ALLOW MINIMUM WALL CLEARANCE WILL RESULT IN HIGH FREON TEMPERATURES AND WILL VOID WARRANTY.

3. Install 2” brass pipes with union between the pump and right side of MODULE A and the tank bulkhead fitting on the left side of MODULE B. When installing the pipe in MODULE B, **be sure to hold another wrench on the flats of the bulkhead to prevent any damage.**
4. If desired, bolt the modules in place using the four mounting pads on the bottom of the module’s legs.
5. Remove the front expanded metal panel on MODULE A and MODULE B. It is not necessary to remove this front expanded metal panel on MODULE C.
6. Remove the water tank cover and untie the water float. Leave the water tank cover off for now.
7. **Check the nameplate to be sure that the line voltage matches the incoming service.**

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Note that a chiller marked 480V will operate on 430V – 500V. A chiller that is marked 230V will operate on 208V – 260V.

8. MODULE A:
    a. LINE VOLTAGE: Run a flexible cable (liquid tight) through one of the grommeted hole in the right side bottom of the base pan and up into the control panel.
    b. Run the other end to a local fused disconnect. The fused disconnect should be no more than 36” from the point of entry to the chiller.
    c. Install slow blow (time delay) fuses in the fused disconnect and use connecting wire per the **FUSE AND WIRE CHART** on the next page.
    d. Connect the three power wires to terminals marked L1, L2, and L3. Use the supplied phase sequence tester to be sure that the L1, L2, L3 sequence is correct.

A **PHASE SEQUENCE TESTER** has been supplied with this chiller. To use:

1. Connect the three leads, marked A, B, and C to the incoming power lines to each module matching the letters A, B, and C on the power terminal.
2. If the wires are connected correctly, the tester will show a **CLOCKWISE** rotation.
3. If the instrument shows a **COUNTER-CLOCKWISE** rotation, disconnect the power from the wires, move wire from L2 to terminal L1, and move wire from L1 to terminal L2.
4. Turn power on and verify that the instrument shows **CLOCKWISE** rotation. Do this for each chiller module as you install them.

IF PHASE SEQUENCE IS NOT CORRECT, OPERATING OF THE CHILLER CAN DESTROY THE COMPRESSOR. DO NOT TURN ON THE CHILLER UNTIL PHASE ROTATION IS CORRECT.

9. MODULE B and MODULE C: Remove the right side panel of each chiller and remove the black control box covers.
    a. Run a flexible cable (liquid tight) through one of the grommeted hole in the right side bottom of the base pan and up into the knockout on the black compressor junction box to a local fused disconnect. The fused disconnect should be no more than 36” from the point of entry to the chiller.
        1. If an optional backpressure pump is installed on this chiller, connect the line wires to the top of the fuse block.

b. Install slow blow (time delay) fuses in the fused disconnect and use connecting wire per the **FUSE AND WIRE CHART** below.

c. Connect the three line voltage wires to the L1, L2, L3 terminals on the contactor inside the black control boxes. Be sure that the phase sequence is correct. Follow instructions in the previous paragraph (for MODULE A) for checking the phase sequence.

IF PHASE SEQUENCE IS NOT CORRECT, OPERATING OF THE CHILLER CAN DESTROY THE COMPRESSOR. DO NOT TURN ON THE CHILLER UNTIL PHASE ROTATION IS CORRECT.

FUSE AND WIRE CHART: Each module requires a separate power line with an external 3-pole fused disconnect installed within 3 feet from each chiller. Install slow blow (time delay) fuses in the fused disconnect and use connecting wire per the chart below FOR EACH MODULE.

CHILLER MODEL	LINE AND PHASE	FUSE SIZE TIME DELAY	MINIMUM WIRE GAUGE
8500 & 8550 MODULE A	480/3	35A	10
8500 & 8550 MODULE A WITH 10HP WATER PUMP	480/3	45A	8
8500 &8550 MODULE B	480/3	20A	12
8500 & 8550 MODULE B with optional backpressure pump	480/3	30A	10
8500 MODULE C	480/3	14A	14
8550 MODULE C	480/3	20A	10
8501 & 8551 MODULE A	230/3	75A	8
8501 & 8551 MODULE B	230/3	70A	6
8501 & 8551 MODULE B with optional backpressure pump	230/3	75A	6
8551 MODULE C	230/3	70A	6

10. GROUNDING: Be sure to connect a separate ground wire to the ground terminal mounted on the base pan of MODULE A, and inside the black control box of MODULES B and C. This wire should be sized to handle at least 50% of the nameplate average amperage.

DO NOT OPERATE THESE CHILLER MODULES WITHOUT A PROPER GROUND CONNECTED TO THE GROUND LUGS ON EACH BASE PAN OR CONTROL BOX.

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INTER-MODULE WIRING

1. Route the interconnecting flexible cable (liquid tight) that comes from the MODULE A through the grommeted holes in the base pans near the black junction boxes. Be sure that you are running the cable marked MODULE B to MODULE B, and the cable marked MODULE C to MODULE C. For MODULE B, the hole is on the left side. Run the flexible cable across the basepan to reach the fitting on the black junction box.
2. Connect each cable to the waiting fitting on the side of each black junction box.

BE SURE TO PROTECT THE WIRE TAGS ON THESE WIRES DURING INSTALLATION INTO THE JUNCTION BOX.

3. Wire each wire in the harness to the matching terminal in this enclosure.
4. Do not install the junction box cover or the right-side panel until after the INITIAL STARTUP section of this book.

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PLUMBING

PIPE INSULATION

ALL PIPES FROM THE CHILLER AND RETURNING TO THE CHILLER MUST BE INSULATED. COMMERCIAL SNAP-ON FOAM INSULATION IS SUFFICIENT FOR THIS PURPOSE.

REASON #1: DURING WARM WEATHER THE INSULATION WILL PREVENT CONDENSATION FROM THE PIPES.

REASON #2: EVERY SQUARE INCH OF ALL PIPES IN THE SYSTEM WILL ACT AS AN EXCHANGE SURFACE FOR THE CHILLER. IN OTHER WORDS, THE CHILLER WILL TRY TO AIR CONDITION THE FACTORY. THE ENERGY USED IN THIS WAY IS WASTED AND MIGHT LOWER THE ENERGY ABILITY OF THE CHILLER TO A POINT LOWER THAN THAT REQUIRED FOR THE MACHINE LOADS.

PIPE SIZING CHART

CHILLER MODEL	MINIMUM HEADER SIZE	MINIMUM DOWN RUNS
8500, 8501	1-1/2”	¾”
8550, 8551	2”	¾”

Note: On type “L” chillers (low flow models) pipe size may be reduced for low flow applications. Consult Unitrol for sizing assistance.

Check the plumbing hookup diagram on page 20 to do the following:

1. **MAKEUP WATER:** Install a water line to the **MAKE-UP WATER IN** port on MODULE B. A 1/2” hose is sufficient for this purpose. This will be used to keep the internal water tank filled if there are any leaks in the outside water system. A float valve is provided in the water tank.

Because this same pipe that feeds this makeup water line will be used to circulate water to the machinery if the chiller is taken out of service, the pipe size should be at least 1-1/2". Install a TEE and shut off valve as shown in the plumbing diagram to allow the chiller to be isolated for service purposes.

2. **Y-STRAINER/FILTER:** A valve is factory installed on this device to allow easy flush out of dirt trapped in the filter without the need to turn off the system. It is not necessary to connect this valve to a drain since water can be sent into a bucket whenever it is desired to flush out this filter.
3. Install this Y-strainer/filter supplied with this chiller to the 2" bulkhead marked **WATER RETURN** located on MODULE B.

WARRANTY IS VOID IF CHILLER IS OPERATED WITHOUT THE Y-STRAINER FILTER INSTALLED ON THE WATER RETURN LINE.

4. Page 20 shows a recommended piping layout that allows the chiller to be taken offline and fast switchover to the incoming plant water supply. It is highly recommended that you follow this layout.
5. A DRAIN fitting is located on the front left corner of the MODULE B base pan. If desired, this can be connected to a drain. The only time water will come out of this fitting is if the water float malfunctions or is not adjusted properly.

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INTER-MODULE HOSE CONNECTION

HOSE CONNECTION HINT: Put a little grease or oil on the tip of the hose barbs to make installation of hoses easier.

1. Install the four 1-1/4” hose supplied with this chiller from MODULE A to MODULE B and MODULE C. The hoses and barbs are all color-coded for this purpose.
2. Tighten the hose clamps.
3. Install the 3/4” hose supplied with this chiller between the pressure BYPASS barb on MODULE A to the BYPASS barb on MODULE B.
4. Tighten the hose clamps.
5. Set outside water valves as follows: TURN ON VALVES #3, #4, and M. TURN OFF VALVES: #1, and #2
6. Remove the expanded metal panel on MODULE B.
7. Turn water on at the MAKE-UP WATER IN port and the tank should fill until the water float valve closes. Be sure that the fill point is below the overflow bulkhead fitting on the tank. While this float arm is factory adjusted, check to be sure that it fills the tank just under the overflow bulkhead fitting. Adjust the float arm if. Leave the cover off.

INITIAL STARTUP

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FIRST POWER UP

NEVER TOUCH ANY WIRE CONNECTIONS UNTIL YOU ARE SURE POWER HAS BEEN DISCONNECTED. USE A METER OR VOLTAGE TESTER TO BE SURE NO VOLTAGE EXISTS ON THESE WIRES BEFORE ENTERING THE WIRING COMPARTMENT.

1. Turn the MASTER ON/OFF switch to OFF.
2. Turn the customer fused disconnect bringing power into the MODULE A **ONLY**.

POWER UP PROCEDURE:

1. **MODULE A:** Turn the **MASTER ON/OFF** switch to the **ON** position. The temperature controller and water pump should turn on.
2. The water pump pressure gauge should be showing pressures between 35 - 55psi. If lower or higher pressures are shown, turn chiller off and contact the Unitrol service department at 847-480-0115 to discuss this problem.
3. Because you will be filling all of the outside pipes, it is possible that the water tank will drain down. If this happens, turn the MASTER ON/OFF switch to OFF until the makeup valve has filled the tank. You can see the water level as a shadow on the side of the water tank in MODULE B.
4. Continue to do this until the water tank remains full when the pump is running.

DO NOT ALLOW THE PUMP TO GO DRY. OPERATING A CHILLER PUMP WITHOUT AT LEAST 24” OF WATER DEPTH IN THE WATER TANK CAN BURN OUT THE PUMP SEALS.

INITIAL STARTUP
UNITROL MODEL 8500, 8501, 8550, 8551

DEW POINT PROTECTION SYSTEM
OPTION 8001-03

FUNCTION: When this option is installed, **t**his option prevents the tank temperature from being chiller below the DEW POINT of the factory air. Water that is below the dew point can cause condensation inside water-cooled welding transformers that can, over time, damage or destroy the welding transformer.

OPERATION: When the control is chilling the water, if the water temperature drops below the DEW POINT at that moment:

1. The “snow flake” light on the controller will stop flashing
2. The refrigeration compressor will stop operation
3. The display will alternately display the tank temperature and the code: **Dpl** (dew point lockout). This will continue until the tank temperature rises 3°F above the dew point temperature of the room.
4. If the set point (SP) that was entered into the controller is below the water temperature, the compressor will come on and chill the water down to the dew point.

EXAMPLE:

1. Controller is customer-set for 60°F (SP setting on the controller)
2. The DEW POINT of the room at that moment is 62°F
3. The water temperature in the tank is 66°F
4. The “snow flake” on the controller is flashing
5. The compressor is operating to chill the water
6. The water temperature in the tank now drops to 62°F (the DEW POINT)
7. The “snow flake” on the controller stops flashing
8. The compressor stops operation, but the water pump continues to operate
9. The display alternately shows the tank water temperature and **dPL**

INITIAL STARTUP

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FIRST TURN ON: When the chiller is first turned on, the display will briefly show:

888

then

- -

Then for about 30 seconds

E O

Then

dPL

then

0 0

and finally the tank water temperature

Once this initial procedure has been completed, the compressor in MODULE A will turn on if the temperature is at least 3°F above the **SP** number as customer-set in the next section.

SETTING TEMPERATURE CONTROL

1. Press the **SEL** button once on the control to display the current **SP or SV** (target temperature). The compressor will operate if the water tank temperature is at least 3°F above this **SP or SV** temperature and the water tank temperature is above the DEW POINT at that moment.
2. If you want to change this number, press the **SEL** button **a second time** and then use the ▲or ▼ button to increase or decrease the **SP** temperature.
3. When you are finished, press the **SEL** button to lock this number.
    a. NOTE: If you do not push the **SEL** button after changing the **SP** temperature value, the system will go back to the original **SP or SV** temperature (will not change the target temperature). If you want to go back to display the tank water temperature, press the ▲or ▼button **at the same time** twice and the tank water temperature will be displayed.
4. For controls with 8001-03 **optional** DEW POINT control: If you want to view the DEW POINT (**d P),** relative humidity (**r H),** room temperature (**r T**), or tank water temperature

(**t t**), push the ▼button until you see the symbol for the value you want to view. Then push the **SEL** button. When you are finished, push the ▲or ▼button **at the same time** twice and the tank water temperature will be displayed.

5. Note that if you do not push the ▲AND ▼button **at the same time twice,** the display will go back to the tank water temperature automatically in about 5 minutes.

If MODULE A is working properly, turn the MASTER ON/OFF switch OFF.

Turn on line voltage to MODULE B and MODULE C.

Turn the MASTER ON/OFF switch to ON.

IF ANY COMPRESSOR STARTS AND IS MAKING A VERY LOUD GRINDING SOUND, TURN THE SYSTEM OFF IMMEDIATELY AND CHECK THE PHASE SEQUENCE FOR THAT MODULE. THIS NOISE WOULD INDICATE THAT THE COMPRESSOR IS RUNNING BACKWARDS!

A COMPRESSOR RUNNING BACKWARDS WILL NOT PUT OUT ANY HEAT TO THE FRONT OF THE MODULE.

RUNNING A COMPRESSOR BACKWARDS FOR MORE THAN A FEW MINUTES CAN CAUSE PERMANENT DAMAGE THAT IS NOT COVERED BY WARRANTY.

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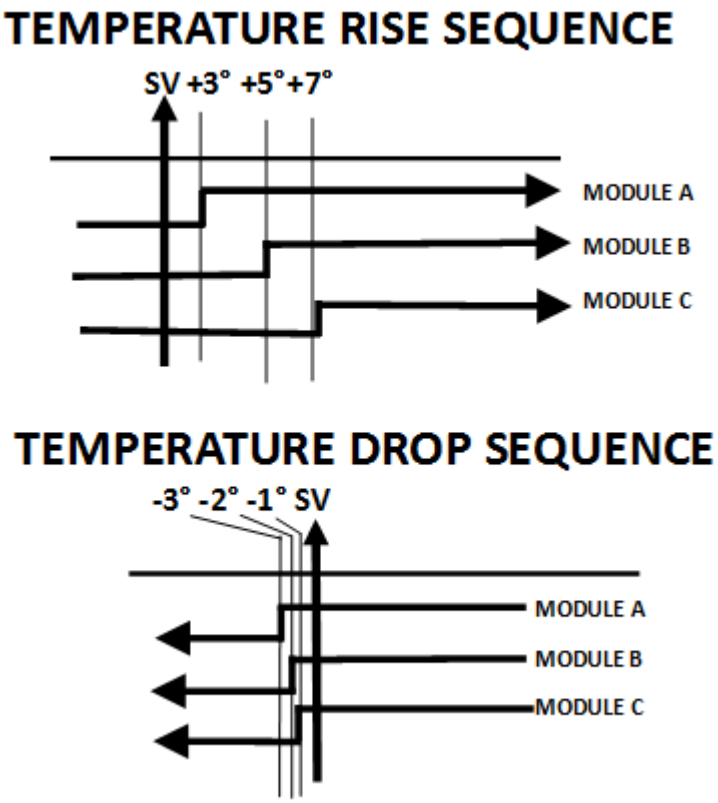
TEMPERATURE SEQUENCE

The chart below shows the operation of the three modules in response to the tank water temperature and the customer-set **SP (SV)** temperature.



FOR CHILLERS WITH OPTIONAL DEW POINT CONTROL: IN ALL CASES BELOW, IF THE TANK WATER TEMPERATURE IS *BELOW* THE DEW POINT, NO COMPRESSORS WILL OPERATE. THE SYSTEM WILL WAIT UNTIL THE TANK WATER TEMPERATURE IS ABOVE THE DEW POINT TEMPERATURE.

If the **SP** on the temperature controller is *lower* than the dew point temperature, then the dew point temperature will become the lowest temperature possible.

INITIAL STARTUP

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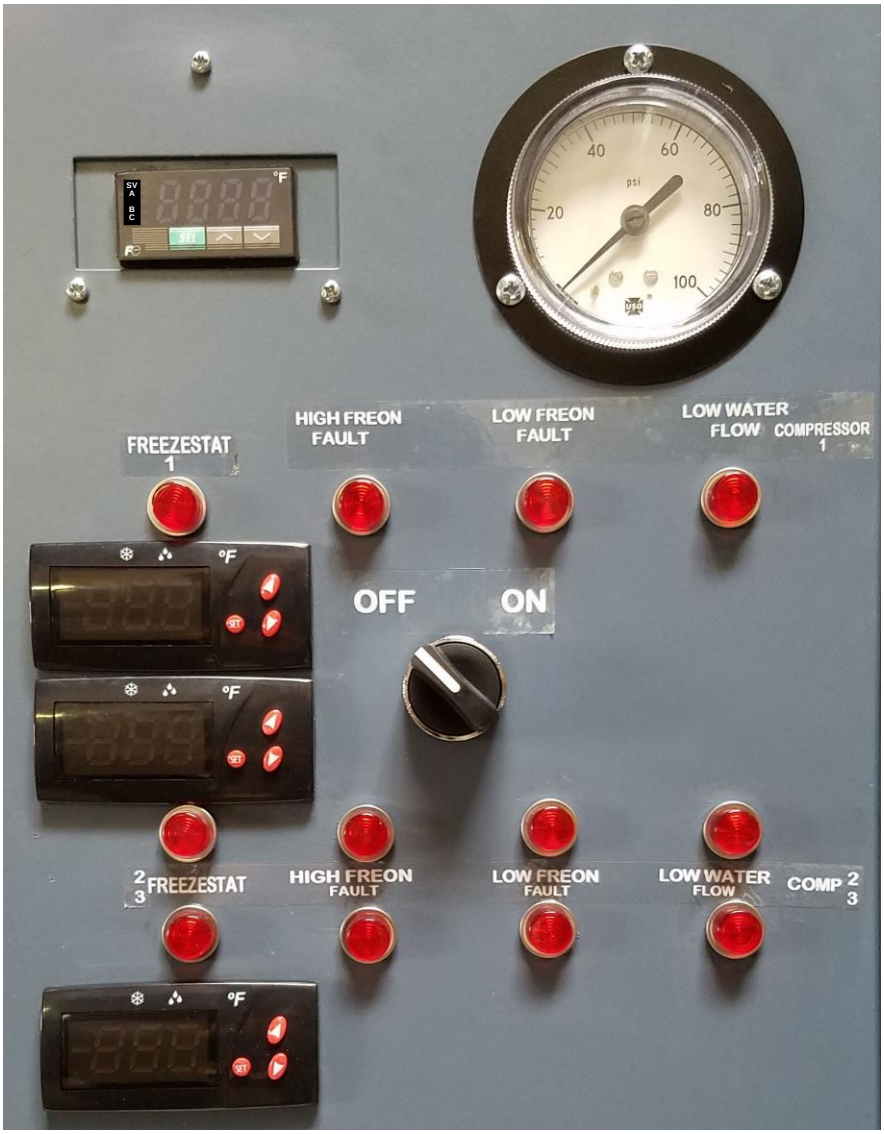
CONTROL PANEL OPERATION AND FAULT INDICATOR LIGHTS



ON TEMPERATURE CONTROLLER
SV = Customer-set temperature target

A = Glows when controller turns on compressor #1 in MODULE A

B = Glows when controller turns on compressor #2 in MODULE B

C = Glows when controller turns on compressor #3 in MODULE C.

ON CONTROL PANEL
Indicators for compressor number shown

HIGH FREON FAULT: Glows when Freon pressure is above 425psi. This will prevent operation of the compressor even if water temperature is above the temperature controller set point (SP or SV)

LOW FREON FAULT: Glows when Freon pressure is below 50psi. This will prevent operation of the compressor even if water temperature is above the temperature controller set point (SP or SV)

TEMPERATURE CONTROLLER FOR OPTIONAL 8001-03 DEW POINT CONTROLLER.

FREEZESTAT FAULT: Glows when water temperature in that module is below 40°F. Note that the FREEZESTAT controllers are factory set at 40°F and cannot be adjusted.
LOW WATER FLOW: Glows when water flow is below 5gpm in that circuit. This will prevent the compressor from turning on even if the temperature is above the thermostat set point (SP or SV).

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MODULE A, MODULE B, and MODULE C:

LOW WATER FLOW: Each module has a separate WATER FLOW switch.

WHY THE LOW WATER FLOW SAFETY SWITCHES ARE IMPORTANT

If the water flowing through the evaporators (chilling component) of either refrigeration system is too low, the water deep in that evaporator can easily reach temperatures below freezing.

When this happens, the evaporator can eventually crack from the expanding ice. This will cause a break between the water system and the refrigeration Freon system destroying the evaporator.

When this happens, the Freon will blow out of the system through the water tank, and water will enter the refrigeration section. Permanent damage can easily occur to the compressor at this point.

DO NOT DEFEAT THE WATER FLOW SAFETY SWITCH!

When the red **LOW WATER FLOW** light glows, the compressor will not operate even if the tank temperature is higher than the **SP or SV** value, but the water pump will continue operation. It can be caused by several conditions:

1. The water pump is not operating correctly. This can be caused by
    a. A motor failure on the pump
    b. An internal broken pump impeller
    c. A 3Ø pump motor operating in the incorrect rotation
2. A foreign object has been sucked into the water pump intake port (bulkhead at bottom of tank).
3. A problem with the MOTOR STARTER contactor K1.
    a. The overload on the water pump MOTOR STARTER K1 has tripped. The reset button on the overload can be pushed to reset the contactor. However the cause should be found and corrected. Otherwise this contactor will continue to trip. Tripping of the overload can be caused by one of the following conditions:
        i. One line of the 3-phase incoming power has been lost causing “single phasing” of the motor.

ii. The setting on the overload is too low. Check the pump motor nameplate for amperage and set the rotary switch on the overload to a value about 25% higher.

iii. Contacts on contactor K1 are arched causing an imbalance of voltage, especially for 3Ø chillers.

b. Contacts on the motor starter are not closing due to a defective contactor or burned out contactor coil.

4. The flow in the machinery is not sufficient to satisfy the minimum setting of the water flow safety switch. Check to be sure that water valves and solenoid valves on the equipment being chilled are open. An internal bypass has been factory installed to allow even a minimum of outside flow.

5. Note that on models with the letter **L,** a much larger internal bypass has been installed to allow the chiller to operate with virtually no outside water flow.

LOW FREON FAULT:

The Freon pressure in the sealed refrigeration system has fallen below the setting on the LOW FREON safety switch. The water pump will continue to operate, but the refrigeration system will not turn on.

This is usually caused by a Freon leak in the system. A certified refrigeration technician can check the system, locate the Freon leak, repair and recharge the system.

A LOW FREON fault can sometimes clear by itself for a short time, but will come back rapidly. You may hear the compressor turning ON and OFF rapidly. In this case, turn the chiller off to prevent damage to the system and consult a certified refrigeration technician.

This problem can also be caused by a faulty expansion valve (TXV). This component controls the flow of Freon in the evaporator.

HIGH FREON FAULT:

The Freon pressure in the sealed refrigeration system has gone above the setting on the HIGH FREON safety switch. When this switch trips, the chiller will reset in 5 minutes or more.

This HIGH FREON FAULT can be caused by one of the following:

DIRTY AIR INTAKE FILTER: If the airflow across the condenser coil is below a minimum requirement, the ability for heat to be removed from this coil will be greatly reduced. The temperature of the Freon in this coil will continue to rise until the set pressure value has been exceeded. This filter should be cleaned with soapy water once per week for normal factory conditions, or more frequently for factories that have a large dust or grinding dust content in the air.

DIRTY CONDENSER COILS: If dirt has been trapped on the surfaces of the condenser coil's fins, the ability for these surfaces to transfer air to the passing air stream will be greatly reduced. See the maintenance section for coil cleaning directions.

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LOW AIR FLOW ACROSS THE CONDENSER CAUSED BY INSTALLATION OF CHILLER TOO CLOSE TO A WALL: If the air intake (air intake filter) is less than 36” from a wall, or the air exhaust grill on the back of the chiller is less than 36” from a wall, air flow will be restricted and will reduce the ability of this air to remove heat from the condenser coil. The chiller has to be moved to eliminate this problem.

USE OF AN INTAKE AIR FILTER DURING EXTREMELY HOT DAYS: If the room temperature exceeds 90ºF, it is possible that the small reduction caused by even a clean intake air filter will cause the system to overheat and trip the HIGH FREON safety switch. Remove the air filter and replace it when air temperature falls below 90ºF.

THE NEED FOR MORE AIR FLOW OVER THE CONDENSER COIL: In extreme cases of high room temperature and restricted air flow around the chiller, it might be necessary to use an additional fan to force air across the condenser coil. This can be done using a commercial fan blowing air into the front of the coil (where air filter is located), or by installing a factory fan booster kit. Consult the Unitrol service department on this.

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DEW POINT CONTROL FAULTS, OPTION 8001-03

This **OPTIONAL** DEW POINT controller monitors four measurements and responds as follows when a fault is detected:

1. **TANK WATER SENSOR FAILURE:** If the control detects temperature, as sampled by the thermister sensor in the water tank, that is below 20°F or above 100°F, the display will show:

   Alt

   The alarm will sound, and a pilot-duty dry contact between terminals **C5** and **NO5** on the Dew Point controller will close. At the same time, a contact between **C5** and **NC5** will open. These contacts can be used to monitor a control fault by an outside system.

   If this fault is displayed, **the control will turn off the compressor** even if the water temperature is 3°F or more above the **SP** temperature.

2. **HUMIDITY SENSOR FAILURE:** The room humidity sensor is located inside the white control box near the ON/OFF switch on the control panel. This indicates that this sensor is feeding a value to the main control of a relative humidity lower than 0°F and above 105°F. This would happen if this humidity sensor has failed. The display will show:

   ALH

   The alarm will sound, and a pilot-duty dry contact between terminals **C5** and **NO5** on the Dew Point controller will close. At the same time, a contact between **C5** and **NC5** will open. These contacts can be used to monitor a control fault by an outside system.

   If this fault is displayed, **the control will <u>not</u> turn off the compressor, but Dew Point protection will not be active.**

3. **3. ROOM TEMPERATURE SENSOR FAILURE:** The room temperature sensor is located inside the white control box near the ON/OFF switch on the control panel. This indicates that this sensor is feeding a value to the main control of a relative humidity lower than 30°F and above 120°F. This would happen if this temperature sensor has failed. The display will show:

   ALr

   The alarm will sound, and a pilot-duty dry contact between terminals **C5** and **NO5** on the Dew Point controller will close. At the same time, a contact between **C5** and **NC5** will open. These contacts can be used to monitor a control fault by an outside system.

   If this fault is displayed, **the control will <u>not</u> turn off the compressor, but Dew Point protection will not be active.**

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BYPASSING CHILLER DURING SERVICE

The chiller can be inspected and adjusted with all exterior panels removed.

However if it is required that the chiller be taken off line, and water flow is still required, set the water valves (as shown on the plumbing diagram) as follows:

CONNECTING LOAD TO BUILDING LINE AND DRAIN:

TURN OFF VALVES: #3, #4, and M

TURN ON VALVES: #1 and #2

CONNECTING LOAD TO CHILLER:

TURN ON VALVES #3, #4, and M

TURN OFF VALVES: #1, and #2

If any problems are incurred during this installation, contact the Unitrol service department at 847-480-0115. Please have the model number and serial number ready.

PREVENTATIVE MAINTENANCE

ONLY A CERTIFIED REFRIGERATION TECHNICIAN SHOULD BE ALLOWED TO SERVICE THE SEALED REFRIGERATION SECTION OF THIS CHILLER

CLEAN THE CONDENSER: Inspect the evaporator coil fins (behind the air intake filter) every 3 months of operation. If there is evidence of dirt or grease buildup, clean the evaporator fins using a water hose from the outside. Flush as much of the trapped debris as possible from between the fins.

If there is too much buildup for reasonable cleaning, use a commercially available aluminum fin spray solvent such as Nonacid condenser coil cleaner, W.W. Grainger #5W403. Follow directions on the product label.

WATER TANK CLEANING: Remove the cover of the water tank once every 6 months and inspect to see if there is a large buildup of material in the water. Remove as much material as possible. Clean the water float.

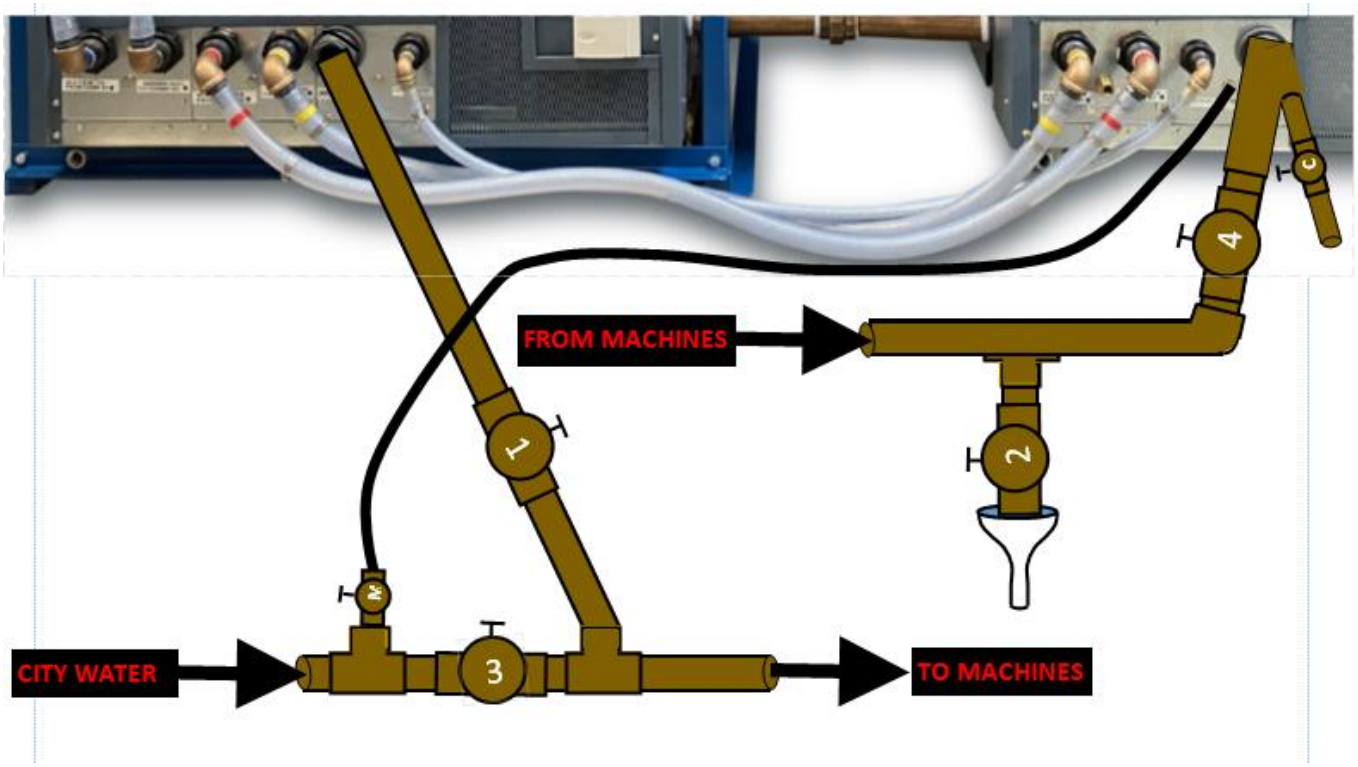
OTHER MAINTENANCE:

Bearings on the water pump are sealed and do not require periodic oil or grease.

There are no other periodic service components in the system.

OUTSIDE PLUMBING CONNECTION

Plumb chiller to city water and load as shown below. Valves are installed to allow fast switchover to city water and drain if needed.



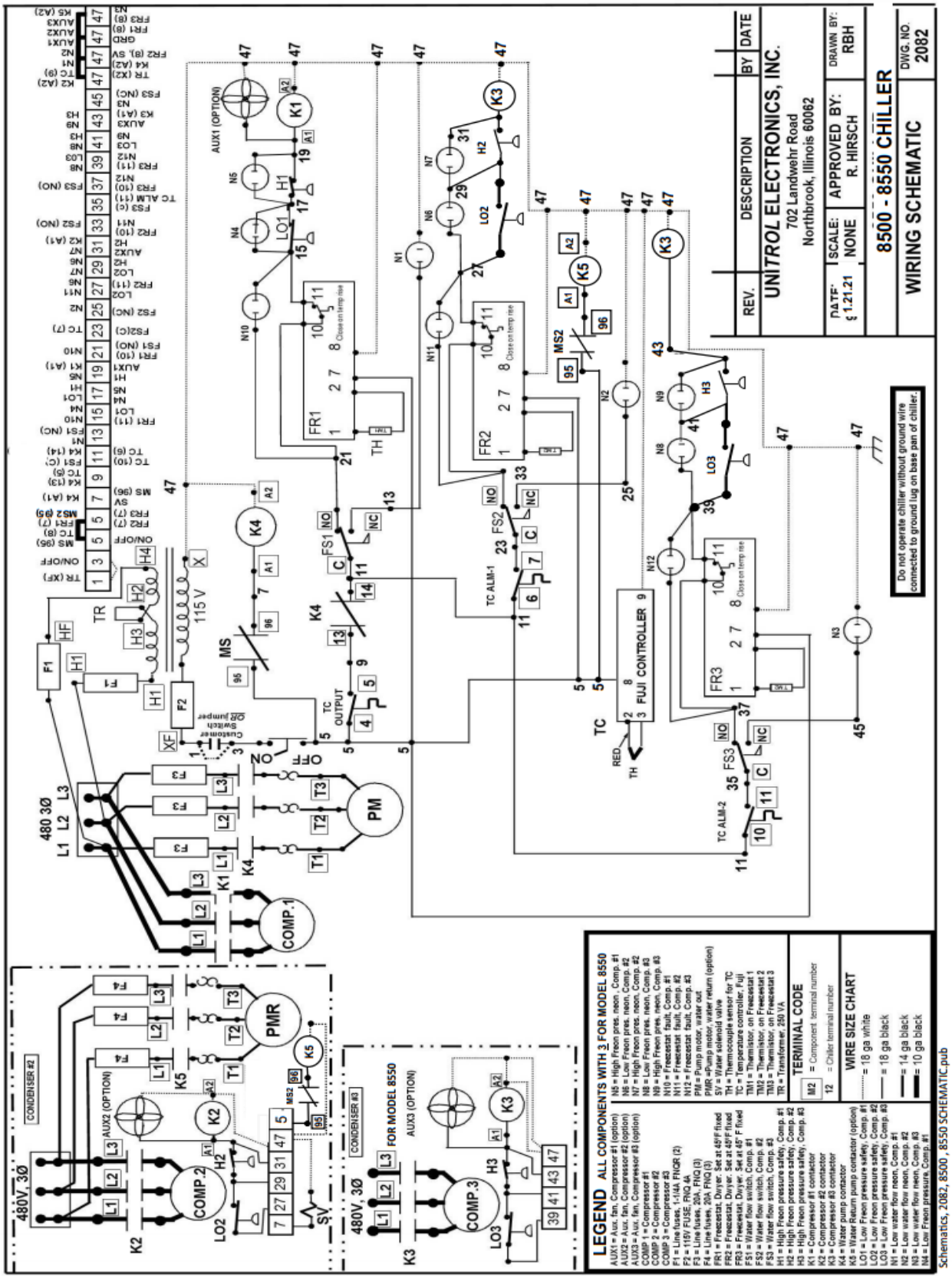
TO OPERATE ON CHILLER:
Open valves 1, 4, and M
Close valves 2 and 3

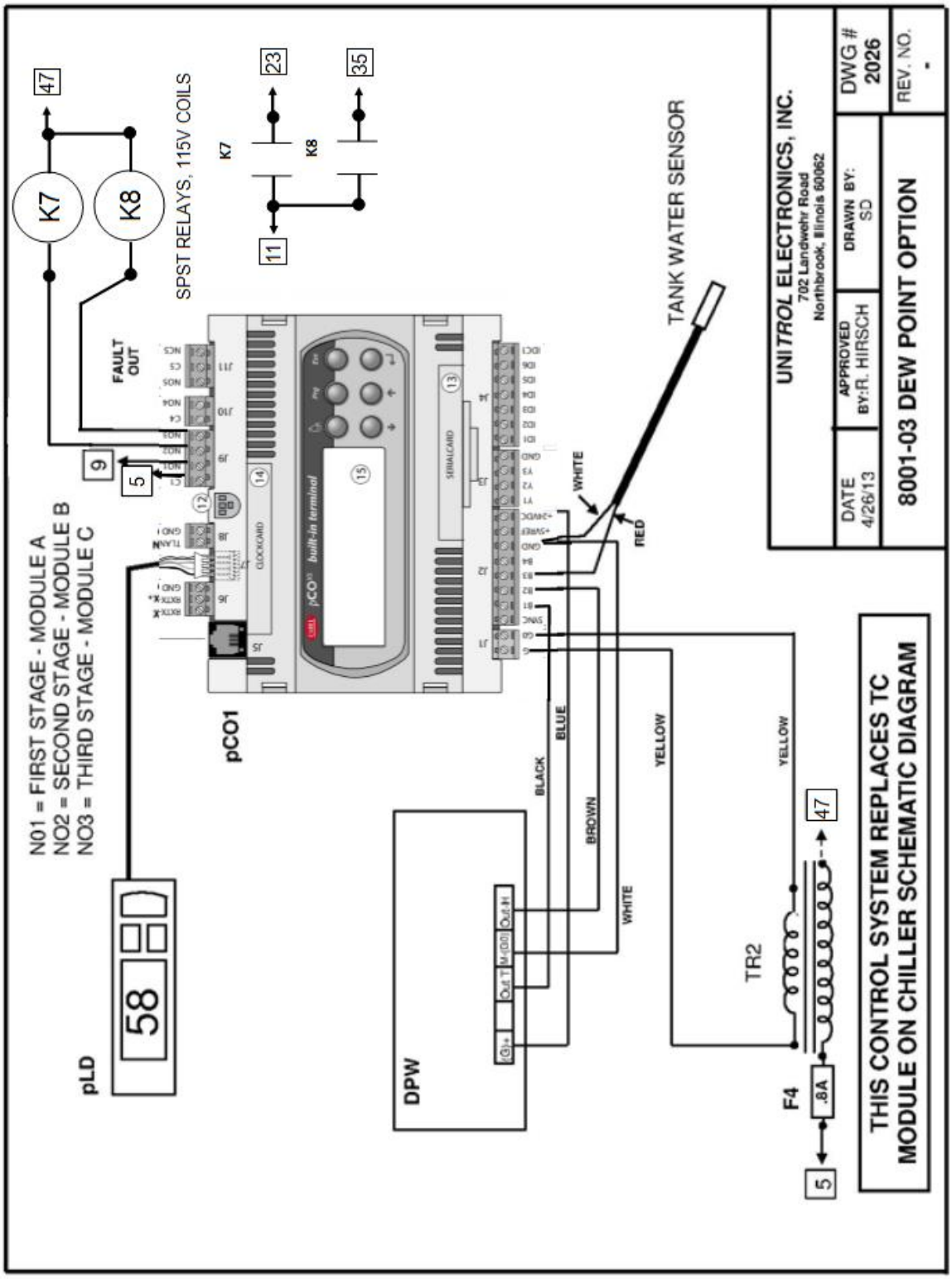
TO OPERATE ON CITY WATER:
Open valves 2 and 3
Close valves 1, 4, and M

To flush out Y filter/strainer, momentarily open valve 2.
To turn off refill water, close valve M

DOCUMENTS

UNITROL MODEL 8500, 8501, 8550, 8551

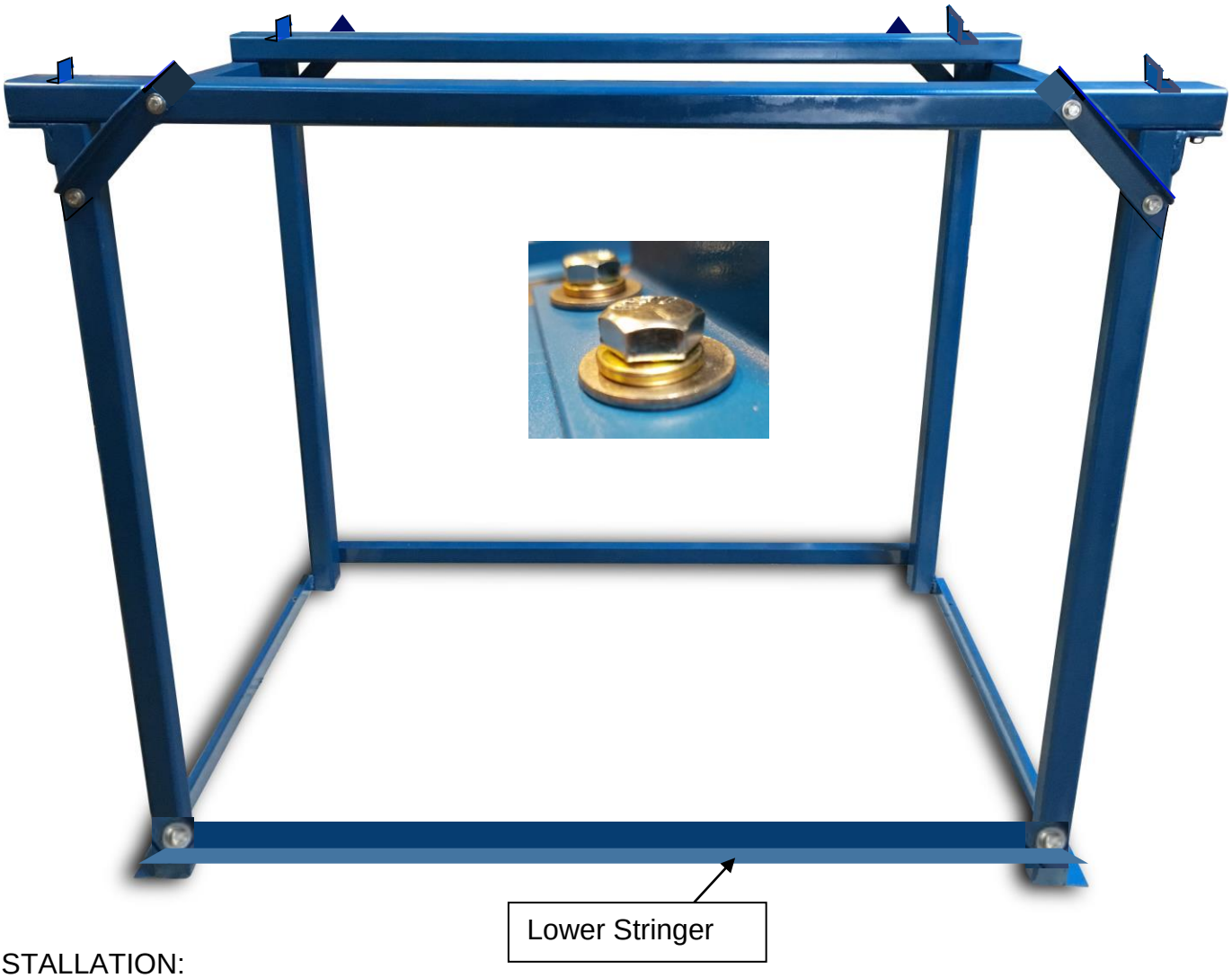



N01 = FIRST STAGE - MODULE A
NO2 = SECOND STAGE - MODULE B
NO3 = THIRD STAGE - MODULE C
SPST RELAYS, 115V COILS
K7
K8
47
23
35
11
9
5
FAULT OUT
pCO1
built-in terminal
pLD
58
DPW
TR2
F4
.8A
TANK WATER SENSOR
WHITE
RED
BLACK
BLUE
BROWN
YELLOW
WHITE
YELLOW
UNITROL ELECTRONICS, INC.
702 Landwehr Road
Northbrook, Illinois 60062
DATE 4/26/13
APPROVED BY:R. HIRSCH
DRAWN BY: SD
DWG # 2026
REV. NO. -
8001-03 DEW POINT OPTION
THIS CONTROL SYSTEM REPLACES TC
MODULE ON CHILLER SCHEMATIC DIAGRAM
pub/schematics/2026 DEW POINT OPTION 8001-03

OPTIONAL MOUNTING STAND MODEL 8510

Assemble mounting stand as shown above using the 20 = ½-13 X 1" hex head cap screws, lock washers, and flat washers supplied with this stand as shown in the photo inset below.

Leave the front lower brace off. Note that the corner braces should be installed so that the end goes above the horizontal tube as shown. This sets the top of the four corner braces above the top tubing as shown in this photo. Assemble per this photo. **Do not install the front lower stringer yet**.



INSTALLATION:

Slide the main module (with the control panel) under the stand. Push it to the back so that the rear legs just touch the rear lower stringer. Then install the front lower stringer to lock the chiller into the stand.

Install the module without the water tank on top of the stand and place the chiller foot pads between the front and rear top braces. There should be about ½" space all around. It is not necessary to bolt the chiller since it will be locked in place.

MAINTENANCE RECORD

DATE	PROBLEM	RESOLUTION

UNI*TROL* ELECTRONICS, INC.
702 LANDWEHR ROAD
NORTHBROOK, ILLINOIS 60062
847-480-0115
techsupport@unitrol-electronics.com