

PROCESS WATER CHILLER

8400, 8401, 8406, 8450, 8451, 8456



UNITROL ELECTRONICS, INC.
702 LANDWEHR ROAD
NORTHBROOK, IL 60062
847-480-0115
info@unitrol-electronics.com

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 more 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 less 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.

UNITROL 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: R407C

OPTIONS:

CHILLER MODEL	LINE VOLTAGE AND PHASE	WATER PUMP
8400	480/3	3 HP, 80GPM @35PSI
8401	230/3	3 HP, 80GPM @35PSI
8406	575/3	3 HP, 80GPM @35PSI
8450	480/3	5HP, 180GPM @35PSI
8451	230/3	5HP, 180GPM @35PSI
8456	575/3	5 HP, 180GPM @35PSI

This model chiller is supplied in two MODULES:

RIGHT MODULE = First stage compressor with water pump and control panel

LEFT MODULE = Second stage compressor, water tank.

Field connection of electrical and water circuits for the two modules is required. All wires and hosing is provided for this interconnection.

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MAINTENANCE RECORD

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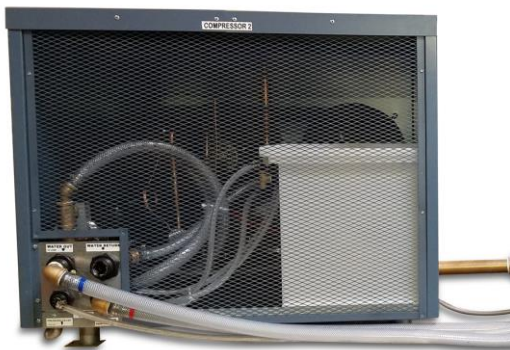
INSTALLATION

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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 45°F, AND SUCH INSTALLATION WILL VOID THE WARRANTY.

1. Carefully uncrate both 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. Remove the right side panel of the LEFT MODULE (with water tank).
3. Remove the front screens from both modules.
4. Install one of the ½" X 12" brass pipes into the water pump on the RIGHT MODULE (with control panel).



5. Install the second ½" X 12" brass pipe into the black bulkhead fitting on the water tank in the LEFT MODULE.



USE A WRENCH ON THE BLACK BULKHEAD FITTING MOUNTED ON THE WATER TANK WALL TO KEEP IT FROM ROTATING WHEN INSTALLING THE BRASS PIPE.

INSTALLATION

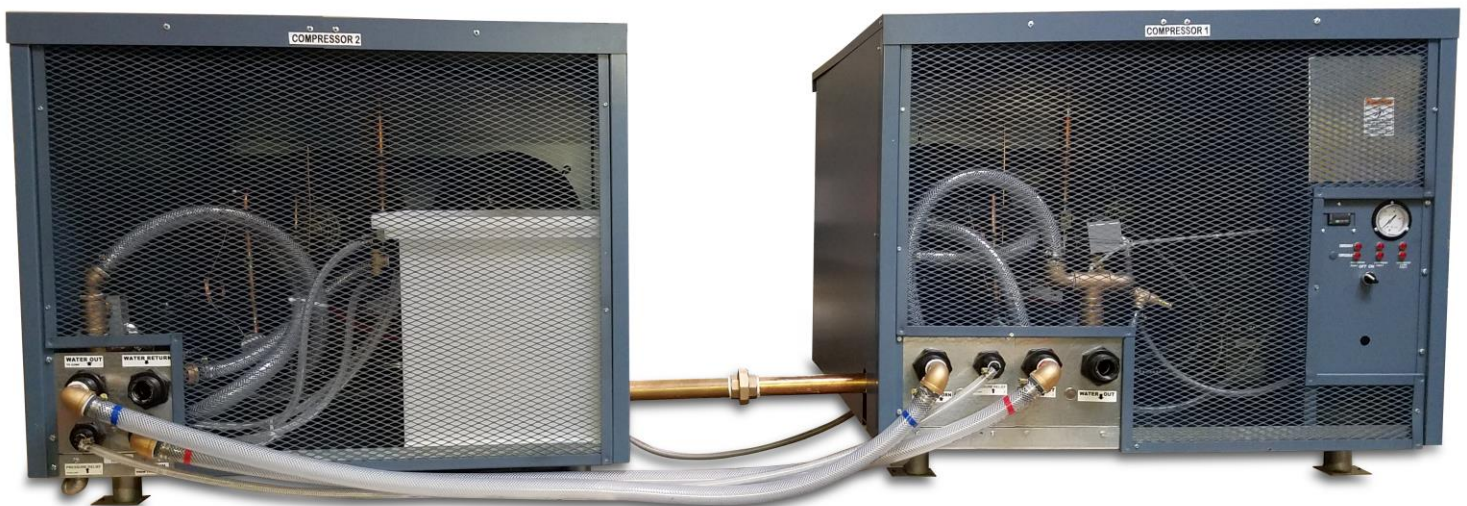
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Install the chillers in a location that will keep the air intake (back of chiller with air filter) and air exhaust (front of chiller with expanded metal plate) **at least 36"** from the nearest wall. This is required to allow maximum air movement over the condenser coil.



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

CAREFULLY push the two modules together so that the 2" brass union mates, and tighten. If desired, bolt the modules in place using the four mounting pads at the end of the round legs



Remove the water tank cover and untie the water float. Leave the water tank cover off for now.

A SEPARATE LINE VOLTAGE SERVICE WILL BE CONNECTED TO EACH MODULE:

RIGHT MODULE: Run a flexible cable from the service hole below the ON/OFF switch to a local fused disconnect. The fused disconnect should be no more than 36" from the point of entry to the chiller. Connect the three power wires to terminal block marked L1, L2, and L3 inside the control compartment.

The order of wire connection is not important now and will be checked later. **Check the nameplate to be sure that the line voltage matches the incoming service.**

- GROUNDING:** Be sure that there is a fourth ground wire inside this conduit. Connect this wire **CONNECT GROUND WIRE HERE** base pan just below this wiring compartment. This ground lug has a green sign located next to it. This wire should be sized to handle at least 50% of the total of both module amperage.



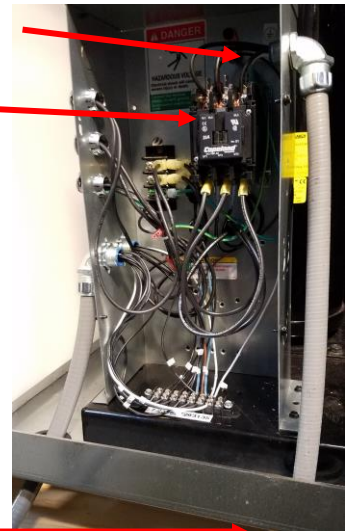
POWER ENTRY POINT

RIGHT MODULE

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CONNECT POWER HERE



POWER ENTRY POINT

LEFT MODULE

7. **LEFT MODULE:** Remove the cover from the black junction box and run a flexible cable from a local fused disconnect through the grommeted hole in the basepan to the left of this junction box. The fused disconnect should be no more than 36" from the point of entry to the chiller. Connect the three lugs on top of the contactor.

The order of wire connection is not important now and will be checked later. **Check the nameplate to be sure that the line voltage matches the incoming service.**

8. Be sure that there is a fourth ground wire inside this conduit. Connect this wire to the ground lug terminal on the base pan just below this wiring compartment. This ground lug has a green sign located next to it. This wire should be sized to handle at least 50% of the total of both module amperage.
9. Install slow blow (time delay) fuses in a customer-supplied fused disconnect and use connecting wire size per the **FUSE AND WIRE CHART** on the next page.

Note that a chiller marked 480V will operate on 430V – 500V. A chiller that is marked 230V will operate on 208V – 260V. A chiller that is marked 575V will operate on 500V – 650V.



DO NOT OPERATE THESE CHILLER MODULES WITHOUT A PROPER GROUND CONNECTED TO THE GROUND LUG ON BASE PAN OF THE RIGHT MODULE AND INSIDE THE CONTROL BOX ON THE LEFT MODULE.

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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
8400 RIGHT MODULE (10 TON W/PUMP)	480/3	30A	10
8400 LEFT MODULE (5 TON)	460/3	20A	10
8401 RIGHT MODULE (10 TON W/PUMP)	230/3	50A	8
8401 LEFT MODULE (5 TON)	230/3	40A	8
8406 RIGHT MODULE (10 TON W/PUMP)	575/3	25A	10
8406 LEFT MODULE (5 TON)	575/3	20A	14
8450 RIGHT MODULE (10-TON W/PUMP)	460/3	40A	8
8450 LEFT MODULE (10-TON)	460/3	30A	10
8451 RIGHT MODULE (10-TON W/PUMP)	230/3	75A	4
8451 LEFT MODULE (10-TON)	230/3	60A	6
8456 RIGHT MODULE (10-TON W/PUMP)	575/3	30A	10
8456 LEFT MODULE (10-TON)	575/3	25A	10

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INTER-MODULE WIRING



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

INTERCONNECT CABLE IN RIGHT MODULE

1. Route the flexible cable interconnecting cable that comes from the RIGHT MODULE through the grommated hole on the left of this module to a grommated hole in the LEFT MODULE base pan just to the left of the junction box.
2. Connect this cable on the left side of the junction box as shown in the photo below.
3. Do not install the junction box cover or the right-side panel until after the INITIAL STARTUP section of this book.

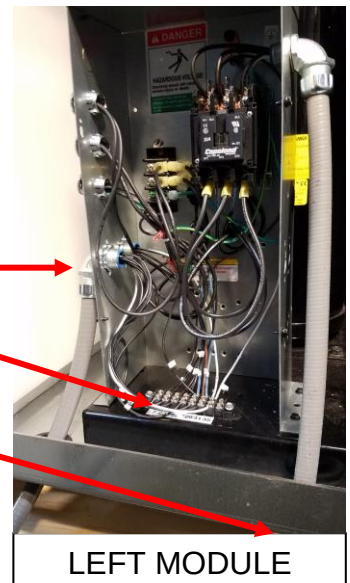


RIGHT MODULE

ENTER JUNCTION BOX HERE

CONNECT WIRES HERE

CONTROL CABLE ENTRY POINT



LEFT MODULE

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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
8400, 8401, 8406	2"	$\frac{3}{4}$ "
8450, 8451, 8456	3"	$\frac{3}{4}$ "

Check the plumbing hookup diagram on page 21:

1. **MAKEUP WATER:** Install a water line to the **AUTO REFILL MAKEUP WATER** port on module 2. A 3/8" pipe or 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". Install a

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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 flush valve is factory installed on the Y-strainer that was supplied loose with this chiller. This will 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. Just place a pail under the output of this flush valve when cleaning the strainer.
3. Install the “Y” filter supplied with this chiller to the black 1-1/4” bulkhead marked **WATER RETURN**.



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

4. Install a TEE and second valve connected to a drain as shown on the plumbing diagram. This will allow use of the chiller on city water during major maintenance.
5. Connect a return pipe from the machinery being chilled to the input of the TEE of step 3 above as shown in the plumbing diagram.
6. Connect a valve to the black 1-1/4” bulkhead fitting marked **WATER OUT** as shown on the plumbing diagram.
7. Install a TEE to the other side of this valve with a valve between this TEE and a TEE from the water makeup line per the plumbing diagram.

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INTERCONNECTING HOSE CONNECTION

1. Install the three water hoses that were supplied with this chiller. The two larger hoses have color tape installed on both ends. Connect these hoses to the hose barbs with the same color tape.
2. Install the remaining ½" hose between the two ½" barbs.
Set outside water valves as follows: TURN ON VALVES #3, #4, and M. TURN OFF VALVES: #1, and #2
3. Be sure that the water float was untied. Then turn water on 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 should be factory adjusted correctly, check and adjust the float arm if necessary for the maximum fill point without overflow. Leave the cover off.

INITIAL STARTUP

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See photo on page 15 to locate warning lights that are used in this INITIAL STARTUP section.



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. Before turning system on, connect the PHASE SEQUENCE TESTER instrument provided with this chiller to incoming power lines L1 (RED), L2 (YELLOW), and L3 (BLUE) on the RIGHT MODULE at the power connection block.
2. Turn the ON/OFF switch to OFF.
3. Turn the customer fused disconnect bringing power into the RIGHT MODULE **ONLY**.
4. Check the Phase Sequence Tester. The **R** rotation light should be ON, and all three phases should be ON.
 - a. If the test shows the rotation to be **L**, Turn off the incoming power and interchange wires L1 and L2 coming into this module.
 - b. Turn power on again and be sure that the rotation is **R**.
5. POWER UP PROCEDURE:
 - a. **MODULE 1:** Turn the **ON/OFF** switch to the **ON** position. The temperature controller and water pump should turn on.
6. The temperature controller should be on, and the water pump should be operating. Because you will be filling all of the outside pipes, it is possible that the water tank will drain down. If this happens, stop the chiller until the makeup valve has filled the tank. Continue to do this until the water tank remains full.



DO NOT ALLOW THE PUMP TO GO DRY. OPERATING A CHILLER PUMP WITHOUT AT LEAST 15" OF WATER DEPTH IN THE WATER TANK CAN BURN OUT THE PUMP SEALS.

INITIAL STARTUP

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7. The water pump pressure gauge should be showing pressures between 25 – 40psi. If lower or higher pressures are shown, turn chiller off and contact the Unitrol service department at 847-480-0115 to discuss this problem.
8. Set the temperature controller to 65° (see page 12).
9. Be sure that the condenser fans in this RIGHT MODULE come on when the C1 light is on in the temperature controller. This will happen if the water temperature is at least 3°F above the set temperature on the controller.
10. Turn the ON/OFF switch to OFF.
11. Disconnect the line power from the RIGHT MODULE.
12. Connect the PHASE SEQUENCE TESTER instrument provided with this chiller to incoming power lines L1 (RED), L2 (YELLOW), and L3 (BLUE) on the LEFT MODULE inside the black wiring enclosure.
13. Turn the ON/OFF switch to OFF.
14. Turn the customer fused disconnect bringing power into the LEFT MODULE **ONLY**.
15. Check the Phase Sequence Tester. The **R** rotation light should be ON, and all three phases should be ON.
 - a. If the test shows the rotation to be **L**, Turn off the incoming power and interchange wires L1 and L2 coming into this module.
 - b. Turn power on again and be sure that the rotation is **R**.
16. Turn ON the power disconnect to LEFT MODULE.
17. Check the Phase Sequence Tester. The **R** rotation light should be ON, and all three phases should be ON.
 - a. If the test shows the rotation to be **L**, Turn off the incoming power and interchange wires L1 and L2 coming into this module.
 - b. Turn power on again and be sure that the rotation is **R**.
18. Turn ON the power disconnect to the RIGHT MODULE.
19. Turn ON the ON/OFF switch on the RIGHT MODULE.
20. Be sure that the AL1 light is glowing on the temperature controller. This will happen when the temperature in the tank goes at least 5° above the set point on the temperature controller.
 - a. If the water temperature is not at least 5°F above the SV value set on the controller, push the SEL button on the temperature controller and increase the SV temperature about 10°F and push the SEL button.
 - b. Wait until the water temperature reaches the value set in a.
 - c. Push the SEL button and lower the temperature to the original value.
 - d. Push the SEL button and the compressors and fans in both the RIGHT MODULE (C1 light ON) and the LEFT MODULE (AL1 light ON) should be operating.

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21. Chiller should now be ready for operation. Contact Unitrol if there are any issues with this chiller. Call from the chiller.
22. Turn the ON/OFF switch OFF and replace all interior covers and exterior panels.

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SETTING TEMPERATURE CONTROLLER

The temperature displayed on the temperature controller is the water tank temperature.

1. Push the **SEL** button on the TEMPERATURE CONTROLLER. The **SV** light will glow, and the display will show the current selected temperature set point.
2. Push the **▲** or **▼** buttons to select the desired water temperature for the chiller. This will be the low temperature when the main compressor will turn off.
3. Push the **SEL** button to enter this temperature and go back to measurement of the water in the tank.

TEMPERATURE CONTROLLER OPERATION

See the controller Dual Stage FUJI operating chart on page 11 to more easily understand the controller sequence:

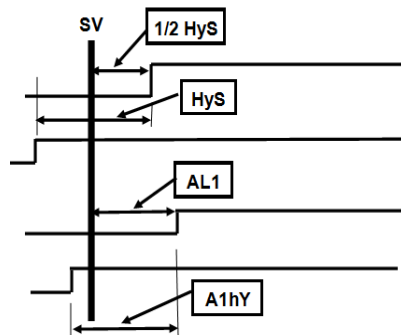
TEMPERATURE RISE:

1. When the water tank is at least 3°F above the **SV** (customer set point), the **C1** light on the temperature controller will glow and the compressor and fans in module 1 will start operating.
2. If the water temperature rises 2 more degrees (total of 5 degrees above the **SV** value) THE **AL1** light on the controller will glow, the module 2 compressor and fans will come on.

TEMPERATURE FALL:

1. When the water tank temperature drops to 2°F below the **SV**, the **AL1** light will turn off and the LEFT MODULE compressor and fans will stop operation.
2. If the water temperature drops to 3°F below the **SV** temperature, the **C1** light will turn off, the RIGHT MODULE compressor and fans will stop operation.

FUNCTION	SYMBOL	BLOCK	VALUE	ACTION
Hysteresis of output C1 (RIGHT MODULE)	HyS	P	6	Temp. Rise: Turn on C1 when 1/2 value (3°F) above SV Temp. Fall: Turn off C1 when 1/2 value (3°F) below SV
Alarm code for AL1 (LEFT MODULE)	ALN1	P	5	Alarm output action
Alarm 1 turn on value (LEFT MODULE)	AL1	Prog	5	Turns on AL1 output when temperature is 5°F above SV
Hysteresis of output AL1 (LEFT MODULE)	A1hY	P-n1	7	Turns off AL1 output when temperature is 7°F below turn o temperature of AL1.
Type of Hysteresis	OnoF	P	ON	Centers value of C1 around SV value



EXAMPLE WITH SV = 60F	RIGHT MODULE	LEFT MODULE
TEMPERATURE RISE . TURN ON TEMPERATURE	63°F	65°F
TEMPERATURE FALL . TURN OFF TEMPERATURE	57°F	58°F

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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 on page 19) 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

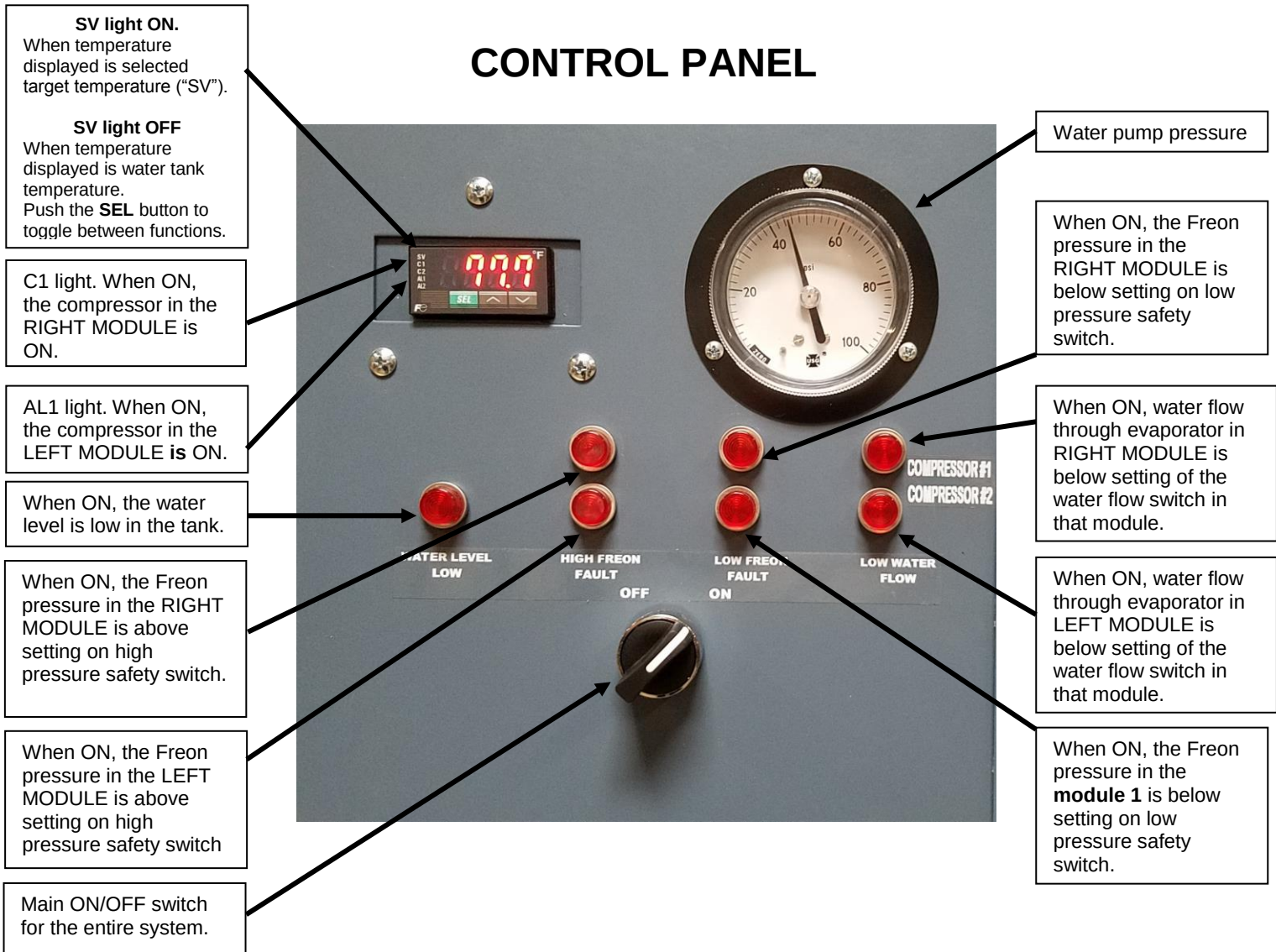
TURN OFF VALVES: #1, and #2

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.

TROUBLE SHOOTING

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CONTROL PANEL



TROUBLE SHOOTING

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DIAGNOSTIC LIGHTS

See page 14 for location of diagnostic lights in this section.

LOW WATER FLOW:

Each module has a separate WATER FLOW switch located in their own enclosures. These are switches on a T with a gray junction box on top. The switch for the main module is marked **FS1**, and the switch for the remote module is marked **FS2**.

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.

When one of the red **LOW WATER FAULT** lights glow, the compressor for that module will not operate even if the tank temperature is higher than the **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
 - d. The water passages on the equipment being chilled are too small, or a shut-off valve is closed in the outside system.
2. A foreign object has been sucked into the water pump intake port (bulkhead at bottom of tank).
3. The Y-strainer installed on the RETURN line is clogged. While the pump is running, open the flush valve on the Y-strainer and flush out the screen strainer.
4. A problem with the MOTOR STARTER contactor K1.

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- a. The overload on the water pump MOTOR STARTER K1 has tripped. The blue 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 the amperage value (for the voltage of the chiller) on the pump nameplate X 1.25.
 - iii. Contacts on contactor K1 are arcing causing an imbalance of voltage, on the three phase motors. Replace the K1 contactor.
 - b. Contacts on the motor starter are not closing due to a defective contactor or burned out contactor coil. Replace the K1 contactor.
5. 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 a low outside flow, but will not allow operation if outside load uses less than about 20gpm.
6. 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 several minutes.

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

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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.

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 90°F, 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 90°F.

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.

WATER LEVEL LOW:

Glow when the water level in the tank drops below the water float switch. The water pump and compressors will turn off when this fault is detected.

PREVENTATIVE MAINTENANCE

UNITROL MODEL 8400, 8401, 8406, 8450, 8451, 8456

**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 an outside water hose. 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. Silt at the bottom of the water tank is normal.

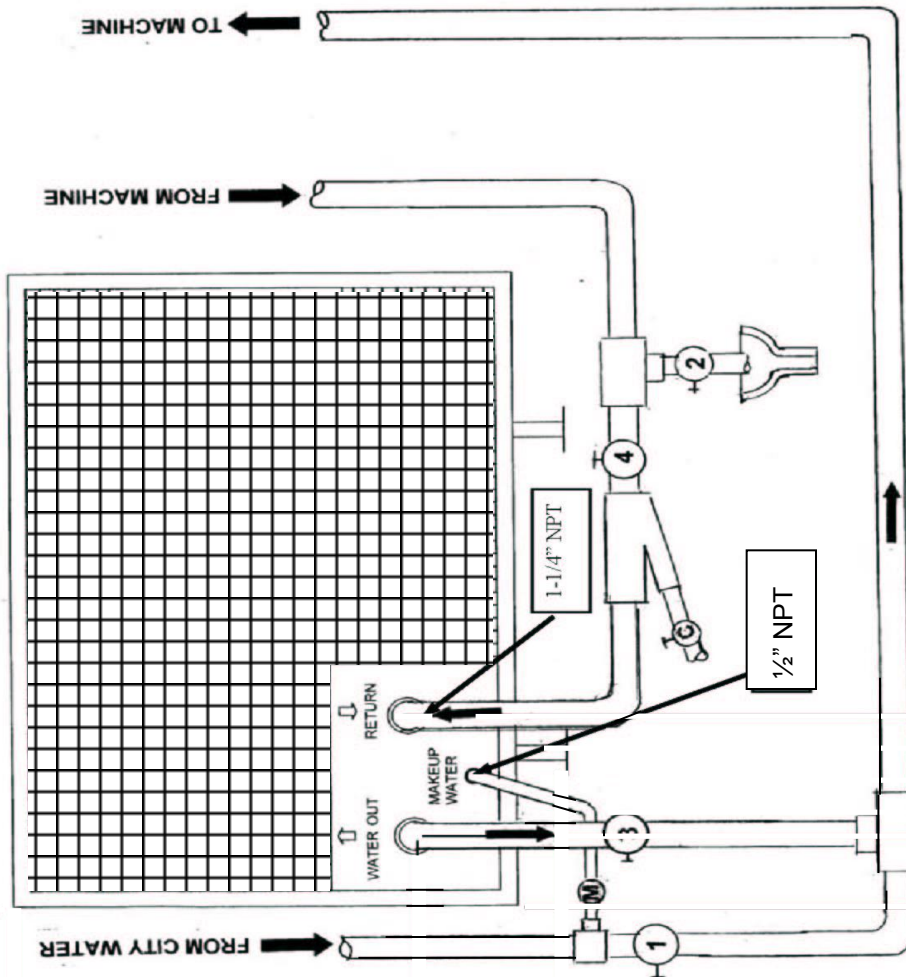
OTHER MAINTENANCE:

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.

DOCUMENTS

UNITROL MODEL 8400, 8401, 8406, 8450, 8451, 8456



UNITROL 15-20 TON CHILLERS RECOMMENDED PLUMBING CONNECTION

Plumbing connections for outside hoses are on remote module as shown above. If connections are made as shown above, the chiller can be taken out of service and city water connected to the load.

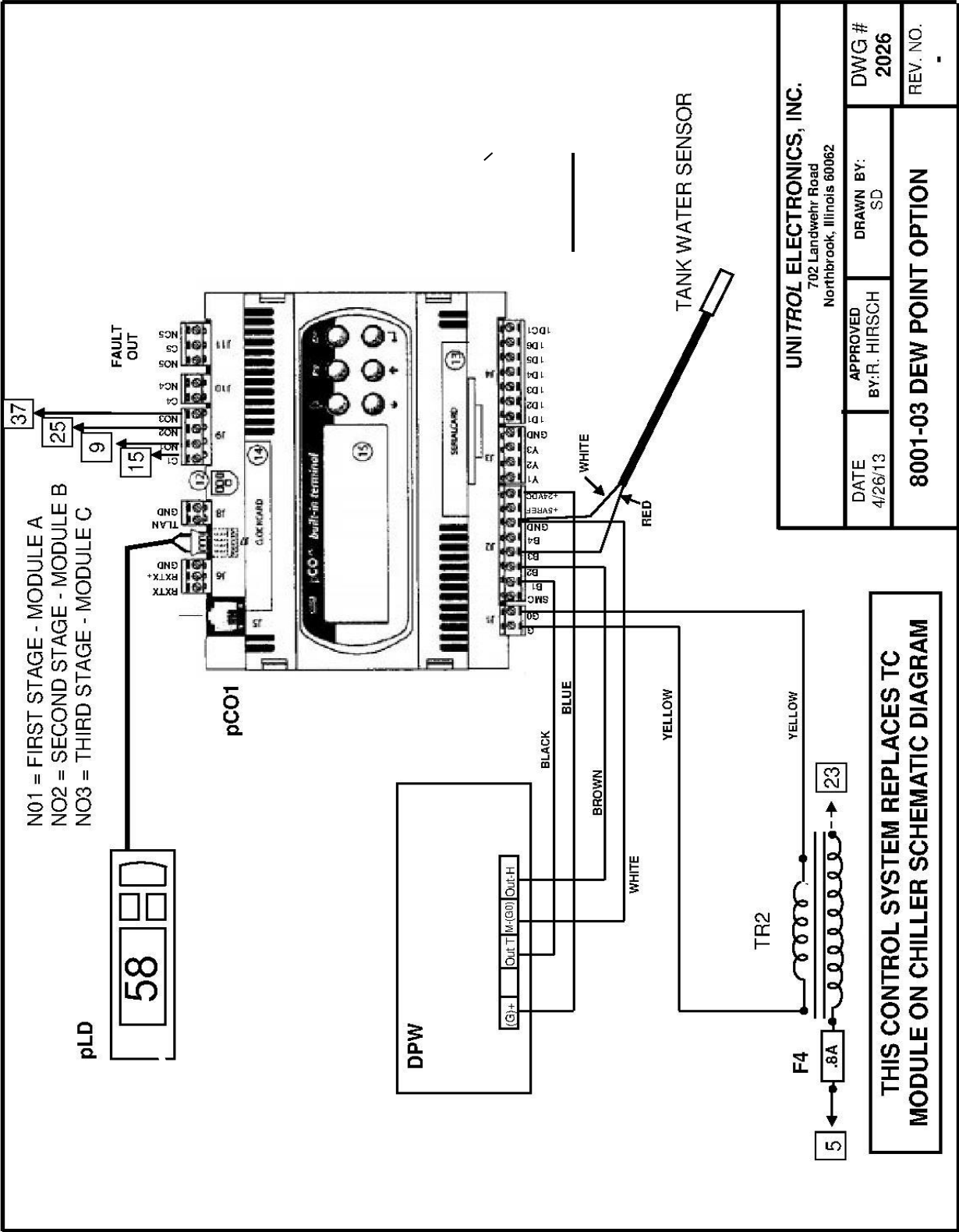
- **TO OPERATE CHILLER:** Open valves 3 and 4; Close valves 1 and 2
- **TO BYPASS CHILLER:** Open valves 1 and 2; Close valves 3 and 4
- **TO SERVICE MAKEUP WATER VALVE:** Close valve M

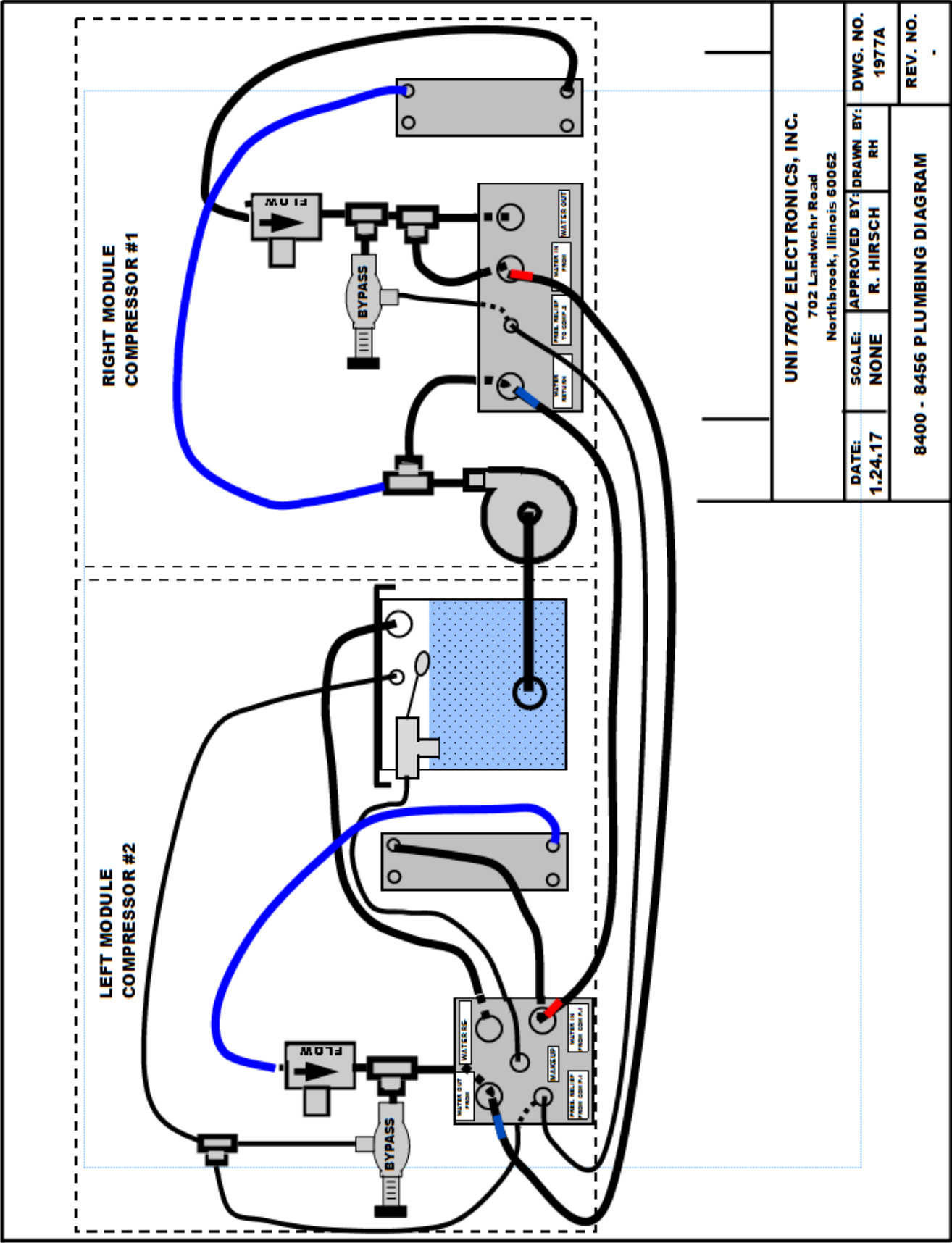
UNITROL MODEL 8400, 8401, 8406, 8450, 8451, 8456



DOCUMENTS

UNITROL MODEL 8400, 8401, 8406, 8450, 8451, 8456





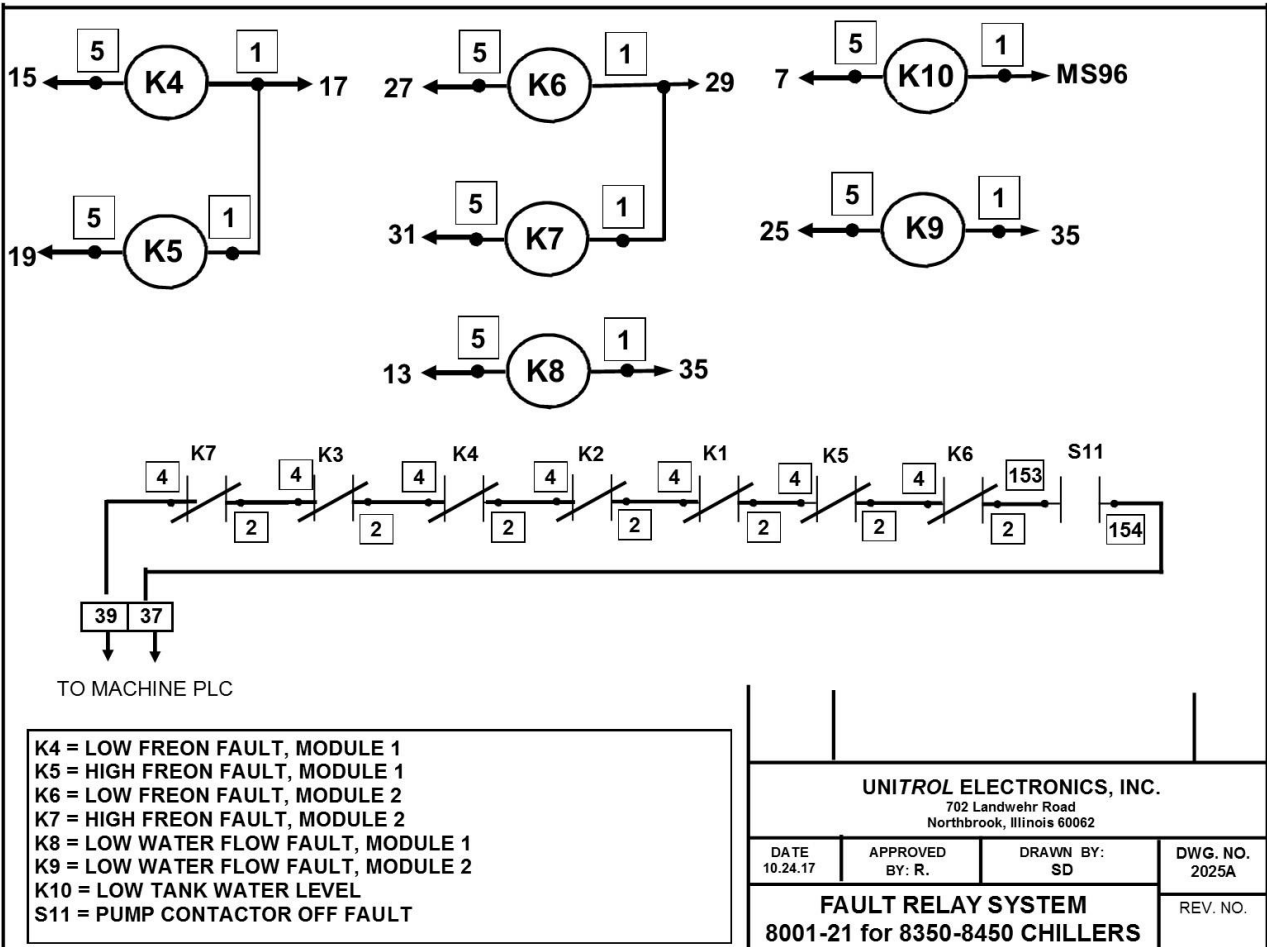
UNITROL ELECTRONICS, INC.
 702 Landwehr Road
 Northbrook, Illinois 60062

DATE:	SCALE:	APPROVED BY:	DRAWN BY:	DWG. NO.
1.24.17	NONE	R. HIRSCH	RH	1977A

8400 - 8456 PLUMBING DIAGRAM

REV. NO.

OPTIONAL 8001-21 FAULT MONITOR SYSTEM



Schematics/Fault relay option 8350-8450.pub

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