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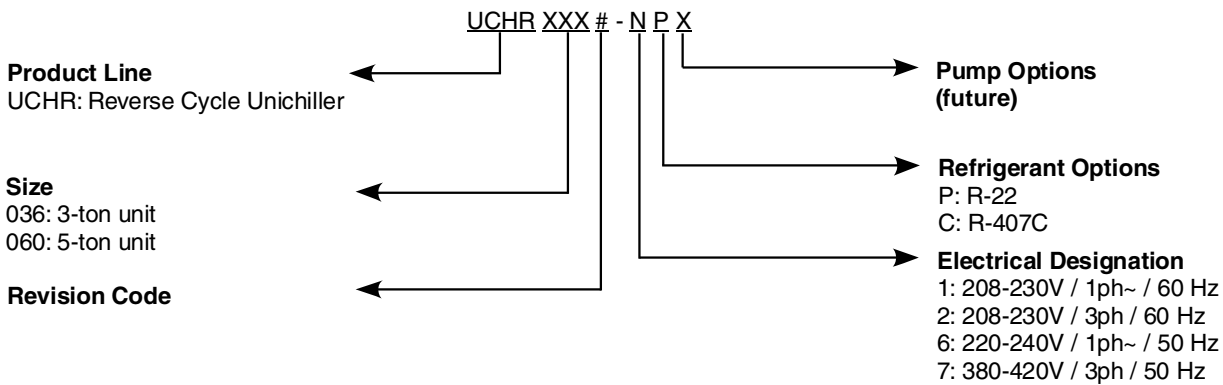
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1. BENEFITS

- ✓ Unichiller is a self-contained and pre-charged unit. Therefore, there is no refrigerant handling during installation. The contractor connects only the water piping and electrical power. There is no refrigerant inside the house.
- ✓ It is easy to zone because there are no freeze-up problems caused by partial load conditions. The Unichiller operates based only on the water temperature sensed by the temperature controller inside the unit (unless the installer made modifications to the controls).
- ✓ Piping is simple.
- ✓ The Unichiller is quieter than a typical condensing unit.
- ✓ It can be placed at a remote location as long as the piping is sized in accordance with this manual.
- ✓ There is no need for a large area around the unit (refer to Location section of this manual for clearances).
- ✓ It is possible to bank multiple units for larger loads.

2. PART NUMBERING INDEX

The following chart represents the part numbering system of the chillers.



3. OPERATING RANGE

Operating Range	COOLING	HEATING
Outside Temperature	20° to 115°F (-7 to 46°C)	10 to 70°F (-10 to 21°C)
Water Temperature	38 to 60°F (3 to 16°C)	Up to 125°F (52°C)

* Use a low ambient kit (A01091-G01) when operated below 65°F (18°C) in cooling mode.

4. SAFETY COMPONENTS



Flow Switch: There is a flow switch that is activated if there is an interruption in the liquid solution flow. It shuts the unit down, if activated.



High Pressure Switch: High pressure switch opens at 400 psig and resets at 300 psig. It is used both in heating and cooling modes.



Low Pressure Switch: Low pressure switch opens at 40 psig and resets at 80 psig. It is used only in the cooling mode.



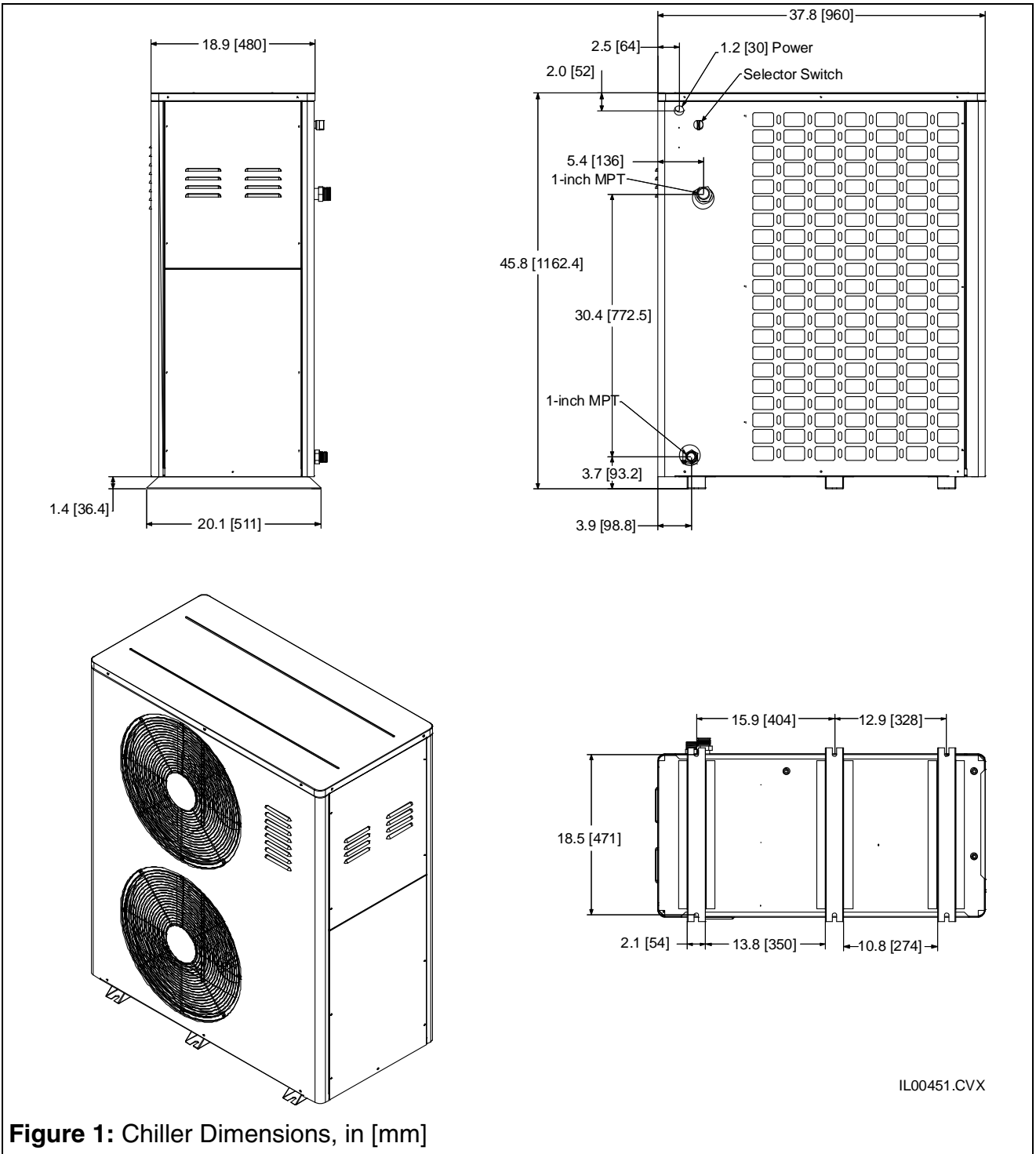
Five-Minute Delay on Break Timer: It activates every time the compressor shuts down.

5. SAFETY CERTIFICATIONS

Unichillers are safety certified to ANSI/U.L.1995, CAN/CSA C22.2 No. 236-05 and MEA (Materials and Equipment Acceptance Division, City of New York). The MEA number is 361-04-E.

6. DIMENSIONS

Figure 1 shows the overall dimensions of the Unichillers. All sizes and models have the same dimensions.



7. TECHNICAL SPECIFICATIONS

		Model Number	UCHR0361-1P	UCHR0602-1P	UCHR0602-2P	UCHR0602-2C
Nominal Capacity		Btu/h [kW]	36,000 [10.6]	60,000 [17.6]		
Sound Level*		dB	66			
Electrical Data	Power Supply		208-230V/1ph~/60Hz		208-230V/3ph/60Hz	
	RLA		25.7	35.8	25	26.4
	Minimum Circuit Ampacity (MCA)		30.7	43.3	29.8	31.6
	Max Fuse/Circuit Breaker		45	70	45	50
	Start up amps without soft start kit @230V		104	148	137	128
	Start up amps with soft start kit @230V		56.5	47.7	47.7	47.7
Acceptable circuit breaker sizes			35 thru 45	45 thru 70	30 thru 45	35 thru 50
Refrigerant	Type		R-22			R-407C
	Charge	lb [kg]	5 [2.3]	8 [3.6]	8 [3.6]	8 [3.6]
Compressor	Type		Scroll			
	Quantity		1			
Fan Motor	RPM		860			
	HP		1/10			
	Quantity		2			
Pump	Type		Stainless Steel Pump			
	RPM		3450			
	HP		¾			
	Design Flowrate	gpm [l/s]	7.2 [0.5]	12 [0.8]		
	Maximum Flowrate	gpm [l/s]	14 [0.9]			
Head Pressure at Design Flowrate**	ft water [kPa]	50 [1500]	45 [1350]	45 [1350]	45 [1350]	
Propeller Fan	Type		Swept-Wing Design Axial Fan			
	Size	in [mm]	18 [457]			
	Quantity		2			
Approximate Chiller Volume	gal [L]	1 [3.8]				
Minimum Expansion Tank Size***	gal [L]	1 [3.8]				
Dimensions	L	in [mm]	37.5 [953]			
	D	in [mm]	18.25 [454]			
	H	in [mm]	45.75 [1162]			
Approximate Shipping Weight	lb [kg]	310 [141]	340 [154]			

* Sound measurement taken 3 ft [1 m] from the front of the unit.

** Evaporator pressure drop is included.

*** Not included, field installed.

OPTIONS

Option	Part Number
Soft Start Kit	A01084-G01
Low Ambient Control Kit	A01091-G01

Refer to Bulletin 30-032 for more information on the optional items.

8. PERFORMANCE

UCHR0361-1P (208-230V/60Hz/1P, R22)													
COOLING PERFORMANCE*							HEATING PERFORMANCE**						
Outside Temperature		Capacity		Power Input	Efficiency		Outside Temperature		Capacity		Power Input	Efficiency	
°F	[°C]	Btu/hr	[kW]	W	EER	COP	°F	[°C]	Btu/hr	[kW]	W	EER	COP
82	27.8	36200	10.6	3300	11.0	3.2	10	-12.2	25800	7.6	3300	7.8	2.3
95	35.0	33900	9.9	3820	8.9	2.6	17	-8.3	27100	7.9	3310	8.2	2.4
100	37.8	33000	9.7	4040	8.2	2.4	33	0.6	30900	9.1	3330	9.3	2.7
105	40.6	32100	9.4	4270	7.5	2.2	47	8.3	35300	10.3	3335	10.6	3.1
110	43.3	31100	9.1	4520	6.9	2.0	55	12.8	38600	11.3	3340	11.6	3.4
115	46.1	30200	8.9	4780	6.3	1.9	65	18.3	43800	12.8	3335	13.1	3.8

UCHR0602-1P (208-230V/60Hz/1P, R22)													
COOLING PERFORMANCE*							HEATING PERFORMANCE**						
Outside Temperature		Capacity		Power Input	Efficiency		Outside Temperature		Capacity		Power Input	Efficiency	
°F	[°C]	Btu/hr	[kW]	W	EER	COP	°F	[°C]	Btu/hr	[kW]	W	EER	COP
82	27.8	56700	16.6	4790	11.8	3.5	10	-12.2	36100	10.6	4620	7.8	2.3
95	35.0	52600	15.4	5460	9.6	2.8	17	-8.3	38100	11.2	4660	8.2	2.4
100	37.8	50800	14.9	5750	8.8	2.6	33	0.6	43900	12.9	4750	9.2	2.7
105	40.6	48900	14.3	6060	8.1	2.4	47	8.3	50900	14.9	4830	10.5	3.1
110	43.3	46800	13.7	6380	7.3	2.2	55	12.8	56000	16.4	4870	11.5	3.4
115	46.1	44600	13.1	6720	6.6	1.9	65	18.3	63700	18.7	4930	12.9	3.8

UCHR0602-2P (208-230V/60Hz/3P, R22)													
COOLING PERFORMANCE*							HEATING PERFORMANCE**						
Outside Temperature		Capacity		Power Input	Efficiency		Outside Temperature		Capacity		Power Input	Efficiency	
°F	[°C]	Btu/hr	[kW]	W	EER	COP	°F	[°C]	Btu/hr	[kW]	W	EER	COP
82	27.8	57200	16.8	4660	12.3	3.6	10	-12.2	39000	11.4	4540	8.6	2.5
95	35.0	53300	15.6	5360	9.9	2.9	17	-8.3	40300	11.8	4560	8.8	2.6
100	37.8	51800	15.2	5660	9.2	2.7	33	0.6	45000	13.2	4620	9.7	2.9
105	40.6	50300	14.7	5990	8.4	2.5	47	8.3	51400	15.1	4680	11.0	3.2
110	43.3	49000	14.4	6330	7.7	2.3	55	12.8	56200	16.5	4730	11.9	3.5
115	46.1	47800	14.0	6690	7.1	2.1	65	18.3	63700	18.7	4800	13.3	3.9

UCHR0602-2C (208-230V/60Hz/2C, R407C)													
COOLING PERFORMANCE*							HEATING PERFORMANCE**						
Outside Temperature		Capacity		Power Input	Efficiency		Outside Temperature		Capacity		Power Input	Efficiency	
°F	[°C]	Btu/hr	[kW]	W	EER	COP	°F	[°C]	Btu/hr	[kW]	W	EER	COP
82	27.8	56400	16.5	4480	12.6	3.7	10	-12.2	36000	10.6	4390	8.2	2.4
95	35.0	52000	15.2	5210	10.0	2.9	17	-8.3	37900	11.1	4440	8.5	2.5
100	37.8	50100	14.7	5530	9.1	2.7	33	0.6	43500	12.7	4540	9.6	2.8
105	40.6	48200	14.1	5870	8.2	2.4	47	8.3	50300	14.7	4610	10.9	3.2
110	43.3	46300	13.6	6230	7.4	2.2	55	12.8	55200	16.2	4650	11.9	3.5
115	46.1	44300	13.0	6620	6.7	2.0	65	18.3	62700	18.4	4690	13.4	3.9

* Based on compressor data. At 44°F [6.7 °C] leaving water temperature and minimum required flow rate.

** Based on compressor data. At 120°F [48.9 °C] leaving water temperature and minimum required flow rate.

9. PUMP, INTERNAL PRESSURE AND EXTERNAL AVAILABLE PRESSURE CURVES

The effect of propylene glycol on the pump curve is less than 1%, therefore, it is negligible.

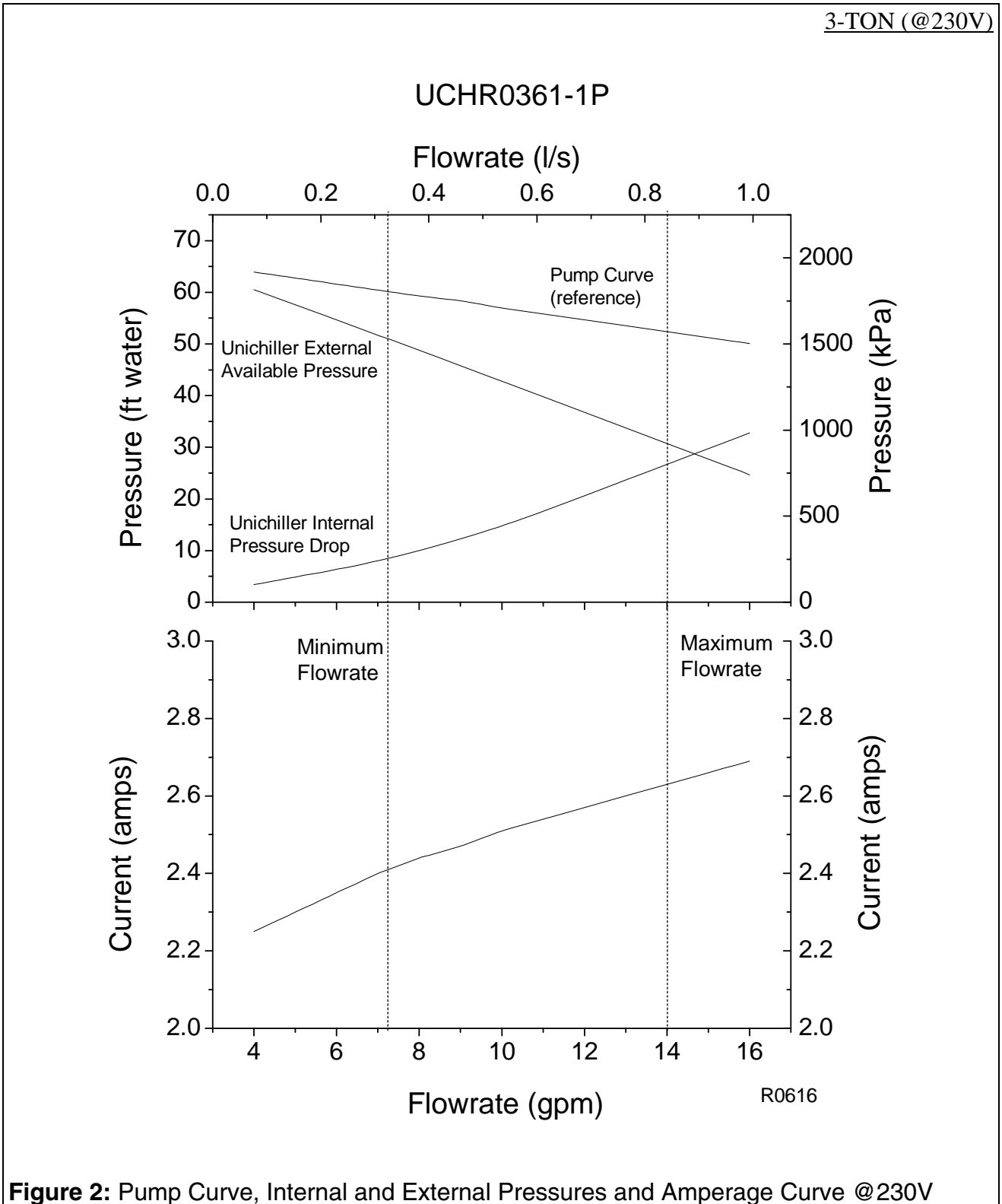
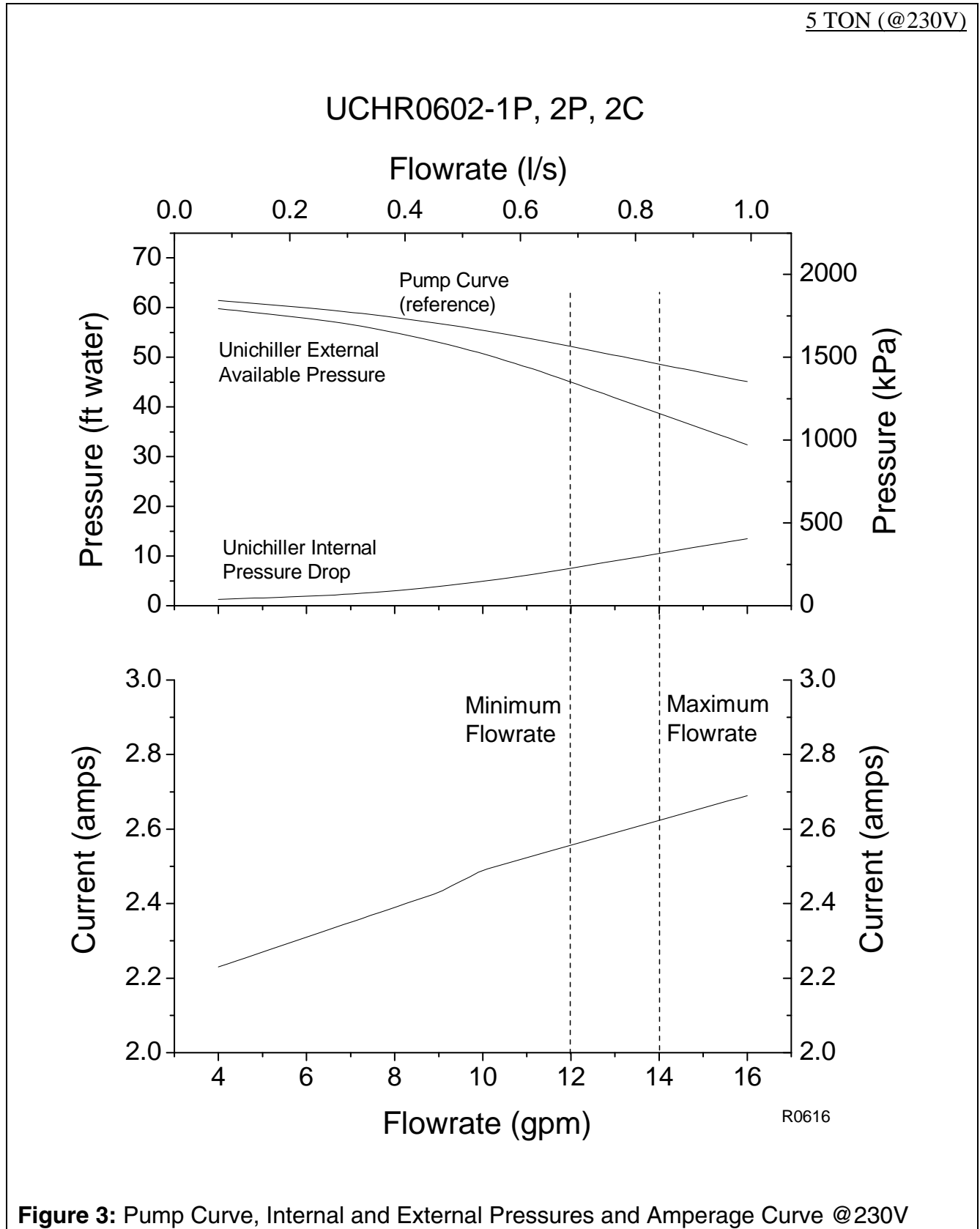


Figure 2: Pump Curve, Internal and External Pressures and Amperage Curve @230V



10. WIRING DIAGRAMS (INTERNAL)

LADDER DIAGRAM

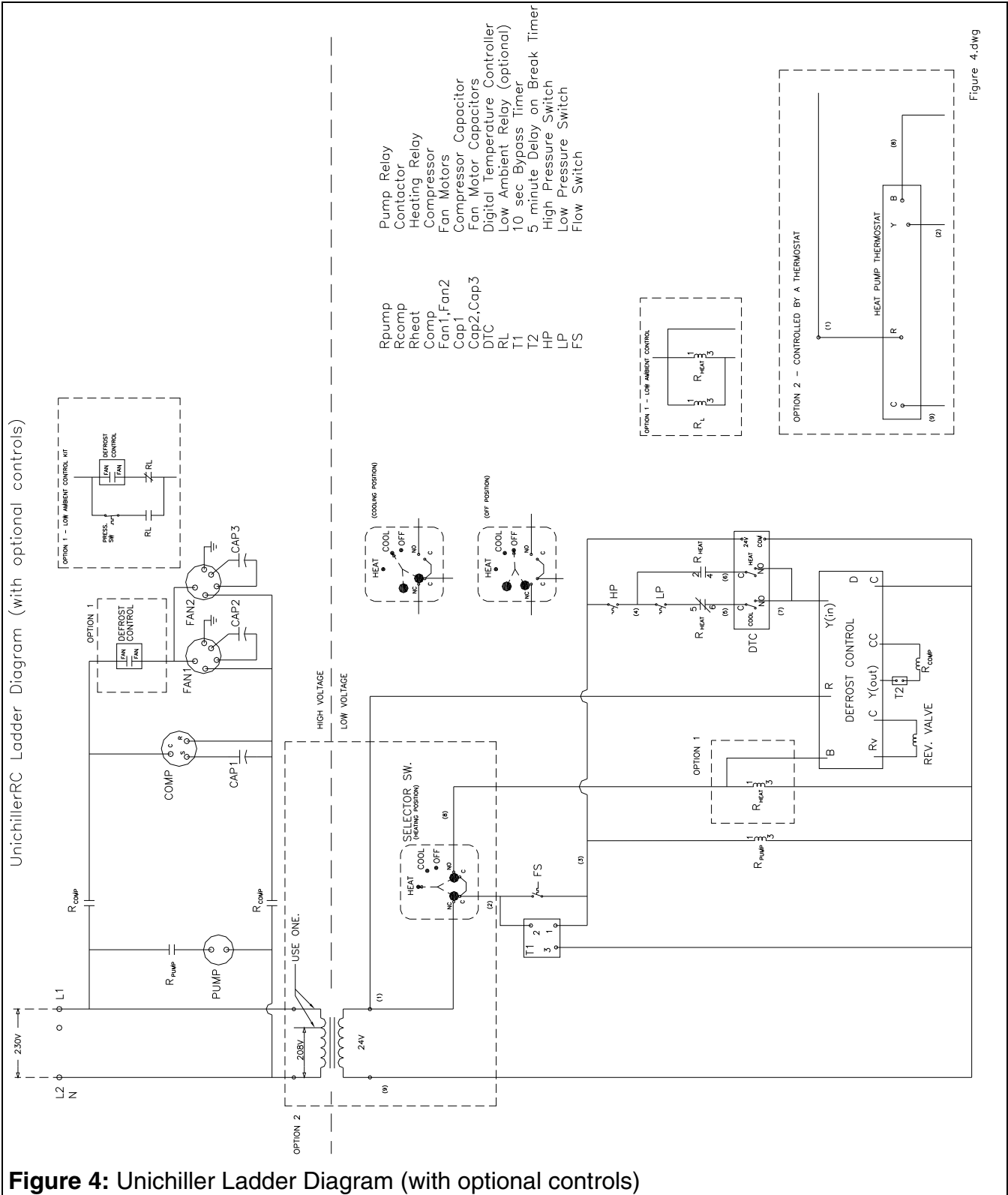


Figure 4: Unichiller Ladder Diagram (with optional controls)

Figure 4.dwg

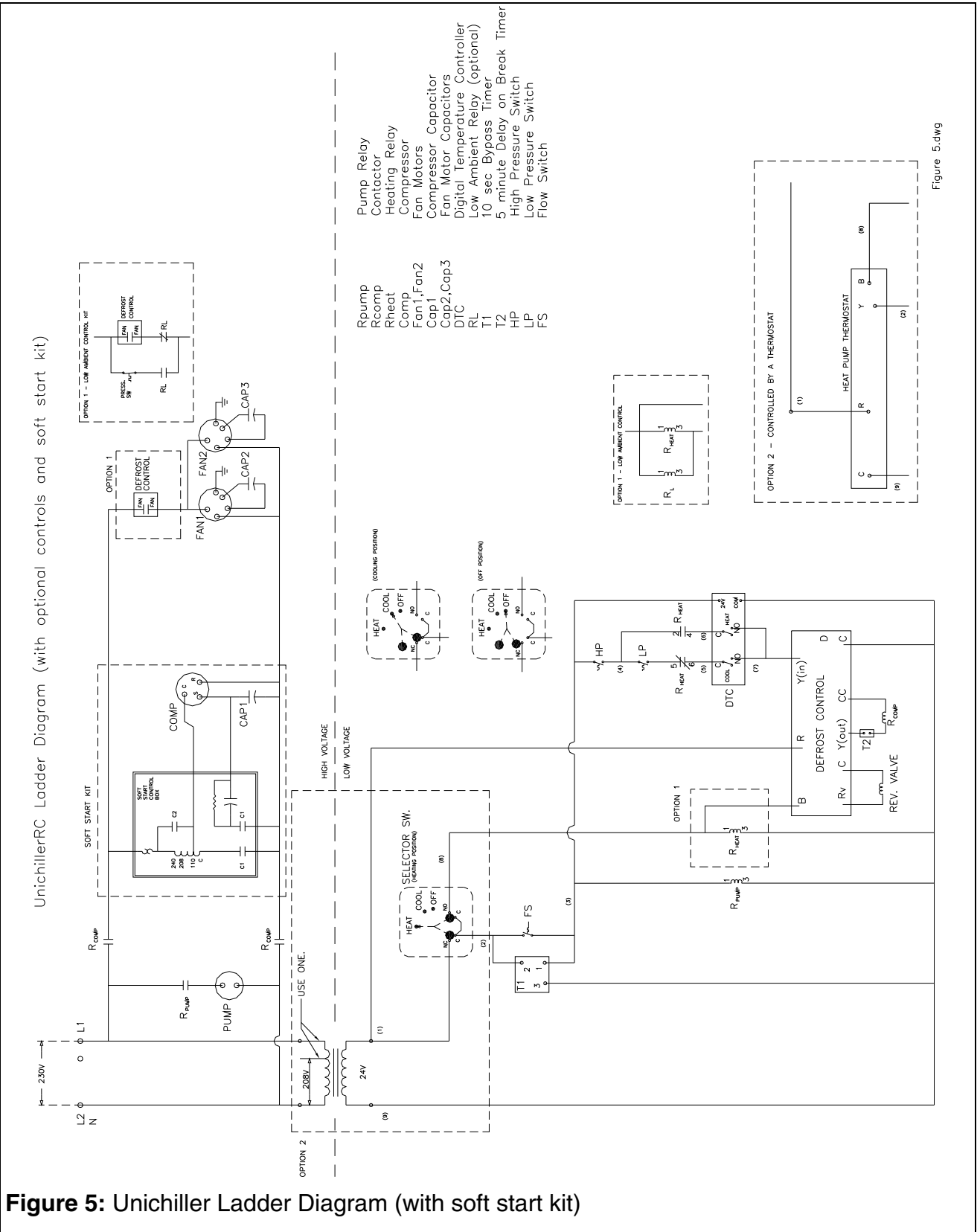


Figure 5: Unichiller Ladder Diagram (with soft start kit)

PICTORIAL DIAGRAM

UnichillerRC (208-230V / 1ph~ / 60 Hz) Internal Wiring Diagram

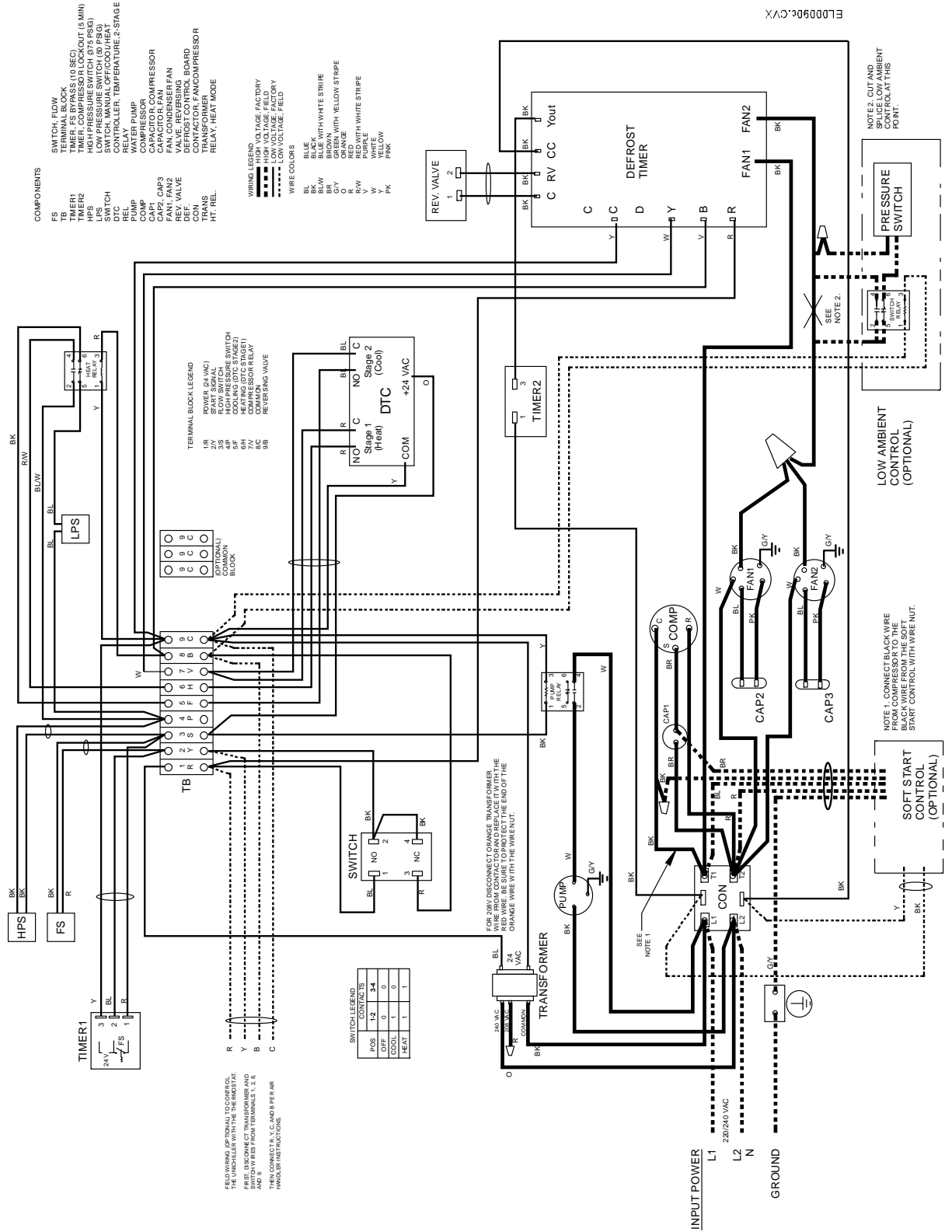


Figure 6: Unichiller Wiring Diagram (208-230V/1ph~/60Hz)

UnichillerRC (208-230V / 3ph / 60 Hz) Internal Wiring Diagram

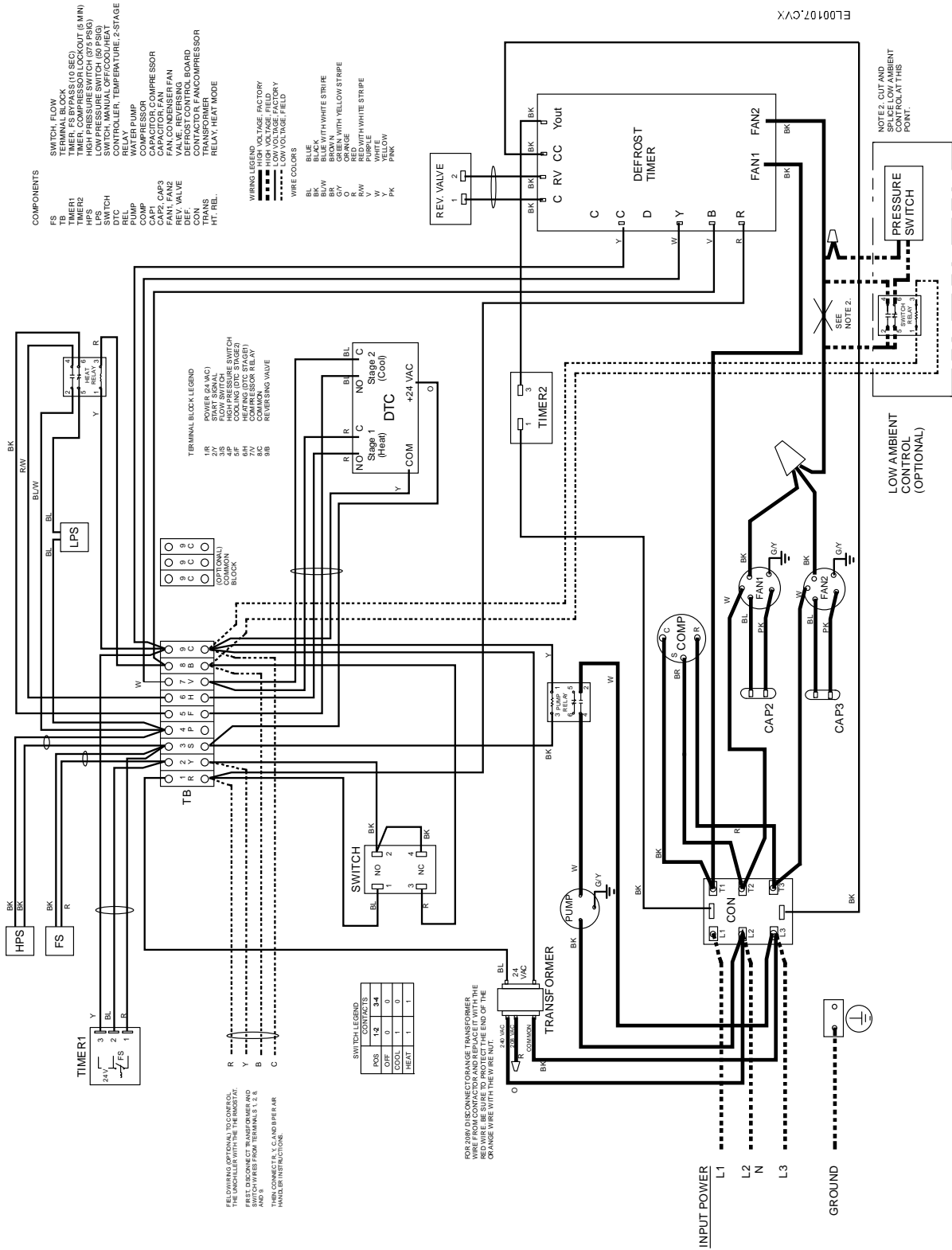


Figure 7: Unichiller Wiring Diagram (208-230V/3ph/60Hz)

11. START UP

Sequence of Operation



OFF MODE (UCHR only): There is no power going to the unit when the unit is in this mode.

COOLING MODE: When power is applied from the circuit breaker, the control transformer is energized. The pump bypass timer (10 second timer) temporarily bypasses the flow switch. The pump starts to move the liquid solution if the system is properly filled and air purged. The digital temperature controller is also activated when the pump is energized. If after 10 seconds the flow switch shuts off for any reason, the system will stop and must be manually re-energized. If the temperature controller calls for cooling, then the compressor and the fans are energized.

HEATING MODE (UCHR only): When the power is applied from the circuit breaker, the control transformer is energized. The reversing valve is also energized, reversing the flow of the refrigerant to make hot water. The pump bypass timer (10 second timer) temporarily bypasses the flow switch. The pump starts to move the liquid solution, if the system is properly filled and air purged. The digital temperature controller is also activated when the pump is energized. If after 10 seconds the flow switch shuts off for any reason, the system will stop and must be manually re-energized. If the temperature controller calls for heating, then the compressor and the fans are energized.

In the heating mode, there is a defrost mode, which is based on the coil temperature, ambient temperature and the compressor run time. In the defrost mode, the direction of the refrigerant flow is reversed to direct hot refrigerant through the condensing coil to prevent the excessive frosting of the coil. The defrost mode is terminated when the temperature of the condensing coil exceeds the field-selectable termination temperature (50, 60, 70 or 80°F). The maximum defrost time is 14 minutes. The default termination temperature is 70°F, therefore, the defrost mode will terminate when the coil temperature reaches 70°F. In a colder or more humid climate, the setting can be raised to ensure the defrosting of the coil. Similarly, in a warmer climate, the setting can be lowered so that the unit is not in the defrost mode longer than it needs to.

There is a five-minute time delay after each time the compressor is shut down. The pump will run continuously in the cooling and heating modes unless the flow switch opens or the power supply is disconnected.