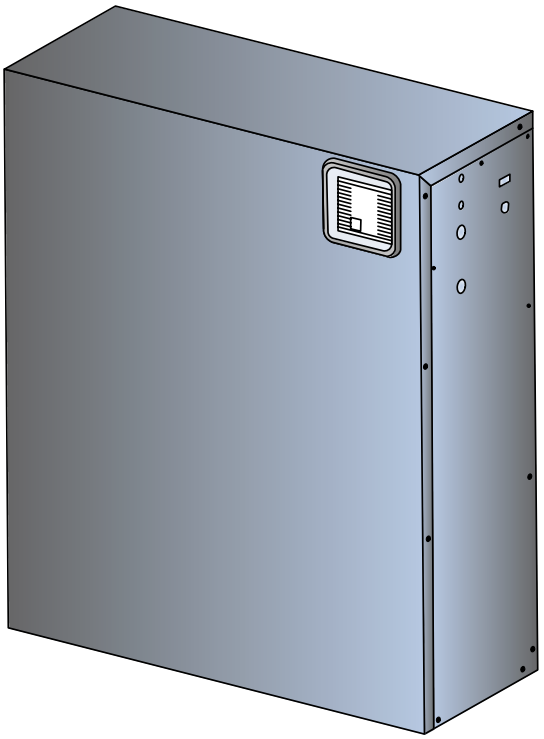
Precision Cooling
For Business-Critical Continuity

Liebert Envirosource™

User Manual - 1.5 to 10 Tons, 60Hz



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1.0 INTRODUCTION

The Envirosource Module is an accessory to the Process Chiller, for use on systems that circulate water and/or glycol solutions that require an isolated loop from the emergency water source. With the heat exchanger providing fluid separation, the Envirosource automatically switches to the emergency water source on a high fluid temperature alarm. Additionally, the module automatically switches to standby pump operation (with interlock to shut down the Process Chiller pump) on a loss of flow alarm.

The Envirosource Module is available in 208/230/460V, single-phase and three-phase, 60 Hz configurations. This module is a pre-piped and wired assembly that is encased in an almond colored, powder coated and baked cabinet. It consists of a copper brazed stainless steel heat exchanger, stainless steel pump, copper piping, RCM4 alarm monitor, adjustable time delay relays, high temperature thermostat, cooling solenoid valve, check valve and flow switch. It also includes a manual ball valve and double-check back-flow preventer on the city water line.

The integral RCM4 alarm monitor has a local display of normal operation, standby pump and standby cooling, "on" LED. Terminal strips are included for two optional alarms (customer supplied dry contacts) and for common alarm output (dry contacts, NC/NO/COM).

Table 1 Model numbers for minimum application flow

Model #	Range (gpm)
ENV05G-_00	0.3 - 1.1
ENV10G-_00	3.7 - 13.3
ENV20G-_00	3.7 - 13.3

The Process Chiller is modified with a bypass line to permit water to flow around the chiller's pump when the standby pump in the Envirosource Module is operating. This bypass line runs from the pump suction line to the pump discharge line and includes a ball valve and check valve (see **Figures 1** and **2**).

2.0 SEQUENCE OF OPERATION

During normal operation, cold fluid flow from the chiller passes across the flow switch, through the heat exchanger, through the pump bypass check valve, past the supply temperature sensor and out to the load (see **Figures 1** and **2**). The standby cooling solenoid valve is closed (de-energized) and the standby pump is off.

If the flow switch senses loss of flow, a time delay is initiated to prevent nuisance switchovers. After the delay (see **Table 2** below), the alarm panel indicates "standby pump on" and the common alarm contacts close, while the standby pump is brought on to resume flow and the chiller pump is locked out. This mode is locked in until the reset button is pressed.

Similarly, if the thermostat senses high fluid temperature, a time delay is initiated to prevent nuisance switchovers. After the delay (see **Table 2** below), the alarm panel indicates "standby cooling on" and the common alarm contacts close, while the solenoid valve is energized to resume cooling. This mode is locked in until the reset button is pressed.

Table 2 Time delay settings

Condition	Default	Delay (seconds)	
		Minimum	Maximum
Loss of Flow	10	0	90
High Water Temp.	180	0	480

Note that during normal operation, the auto/manual switches (see **Figure 8**) are set to "auto". The switch can be set to "manual" to force switchovers to standby pump and/or standby cooling for trouble-shooting or maintenance.

Note that the "remote shutdown" function (see **4.0 - Installation**) prevents emergency switchover operation regardless of the status of other controls.

3.0 SYSTEM COMPONENTS

RCM4 Monitor is configured to activate an LED and an audible alarm. The common alarm output contacts will close in response to a loss of flow or high supply fluid temperature. The silence/reset button silences the alarm. The button also resets the LEDs and alarm contacts if the unit has returned to normal mode.

Thermostat monitors supply fluid temperature. The thermostat (switchover) setpoint is adjustable from 40°F to 90°F (4°C to 32°C). The setpoint has a differential of 3.0° to 12.0°. The recommended setting is 3.0°.

NOTE
Some applications may require different setpoints and differentials. Consult your local Liebert representative or the factory for assistance.

Flow Switch monitors supply flow. The flow switch setpoint is adjustable. See **Table 1** for minimum flow switch setpoint range.

Solenoid Valve is 24VAC, 2-way, pilot or direct operated, with brass body.

Manual Ball Valve is 1/4 turn, brass body for shutoff or trimming of emergency water source flow.

Back-Flow Preventer is of double-check design and is located at the emergency water source piping connection point.

4.0 INSTALLATION

Prepare the location(s) for the unit (see **Figure 4**). Allow adequate clearance for convenient maintenance. Anchor the unit to the floor or bolt it securely to the wall using appropriate anchors (supplied by others).

WARNING

Failure to fasten unit securely to wall studs or structural members with appropriate anchors (supplied by others) may result in product failure and personal injury.

Connect the unit piping to the chiller, load, emergency water supply and drain (or recirculator). Piping connections are labeled on the unit. Be sure to bleed all air out of the fluid system. Note that the pressure limit of the Envirosource Module is 100 psig.

CAUTION

To prevent leaks within the Envirosource Module, the fluid pressure should not exceed 100 psig. For installations using an Envirosource above this rating, a pressure-reducing valve (supplied by others) is required.

Connect unit to the required AC power source through a remote on/off switch (field supplied) as indicated on the unit nameplate. Electrical service shall conform to national and local electrical codes. Refer to unit nameplate for full load amps (FLA), wire size amps (WSA) and overcurrent protection device (OPD) requirements. Refer to **Figure 8** when making connections.

Connect pump interlock to Process Chiller. Connect optional control wiring for remote shutdown, remote indication of loss of flow, remote indication of high temperature and common alarm, as required.

5.0 MAINTENANCE

Periodic preventive maintenance should include a monthly manual switchover to ensure that the system operates properly.

Figure 1 General piping arrangement—Envirosource standby pump and cooling module with Process Fluid Chiller 1-1/2 to 5 ton air cooled models

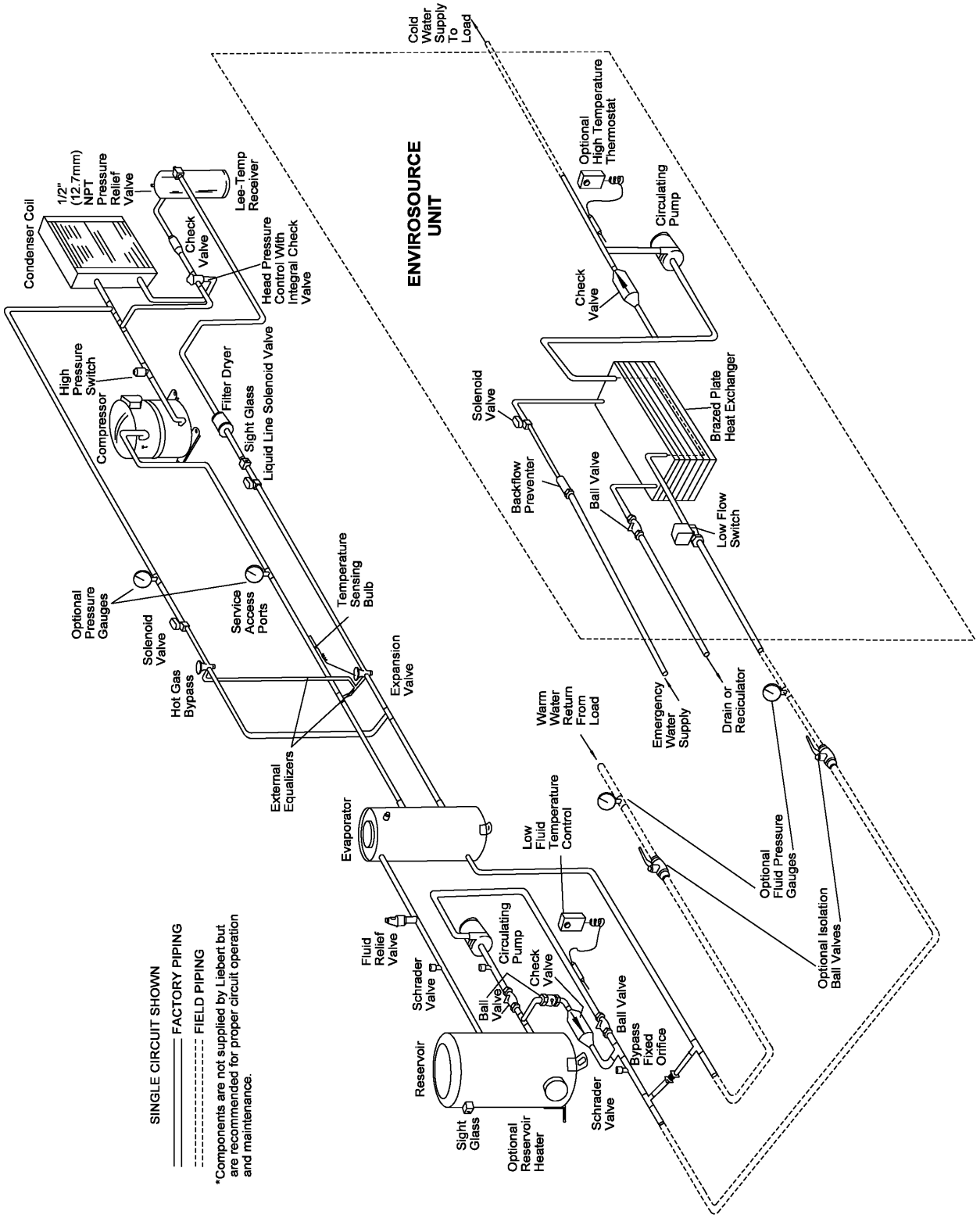


Figure 2 General piping arrangement—Envirosource standby pump and cooling module with Process Fluid Chiller 8-10 ton air cooled models with electronic hot gas bypass

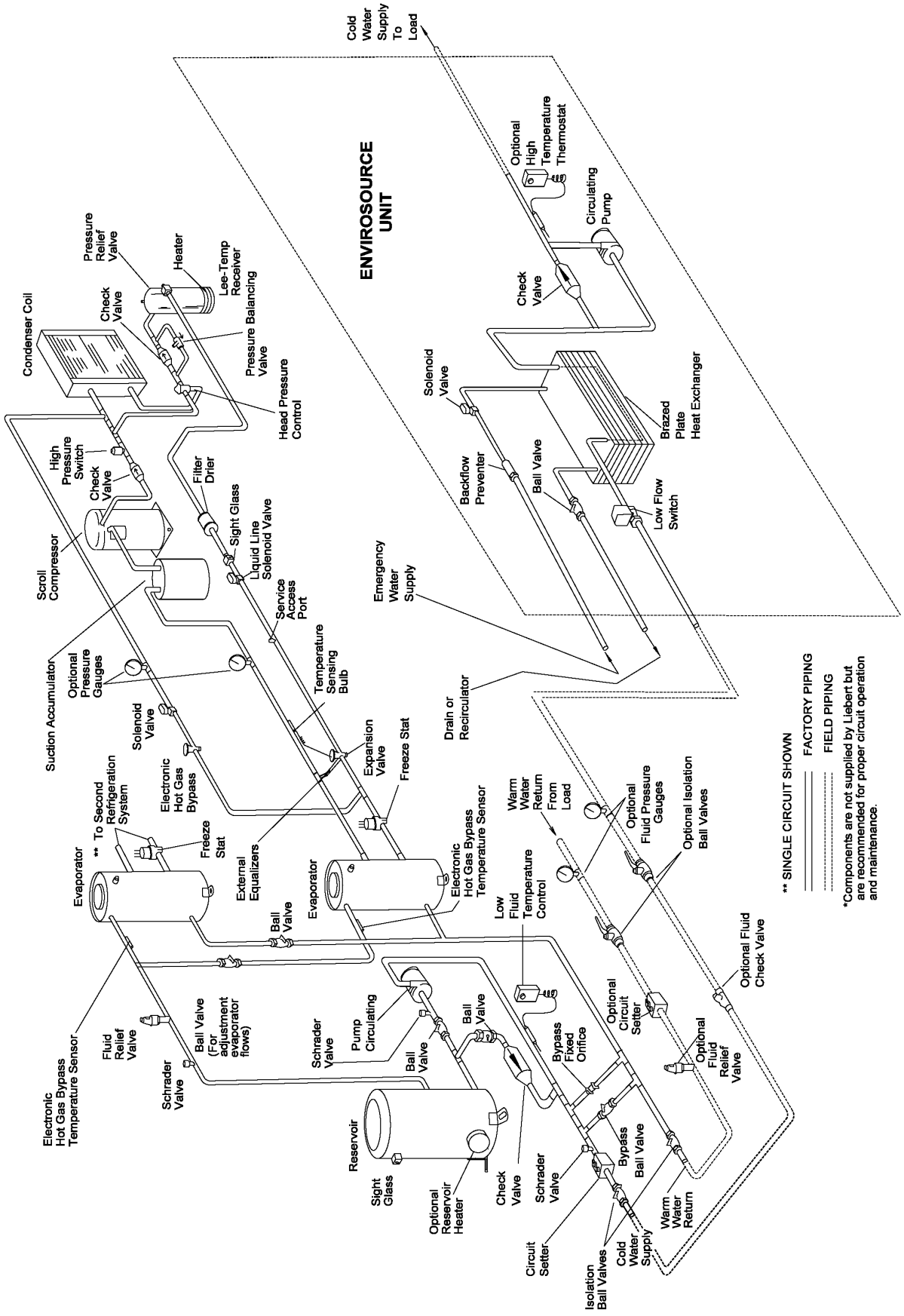
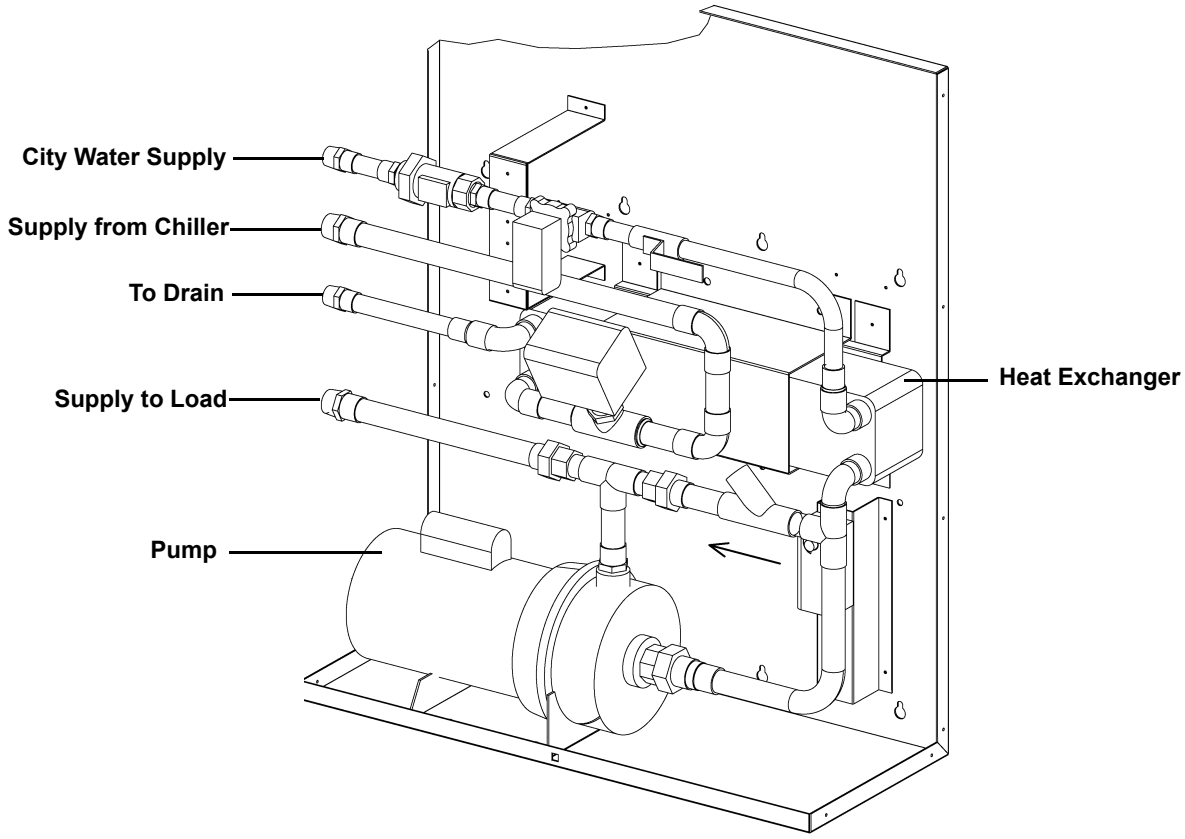
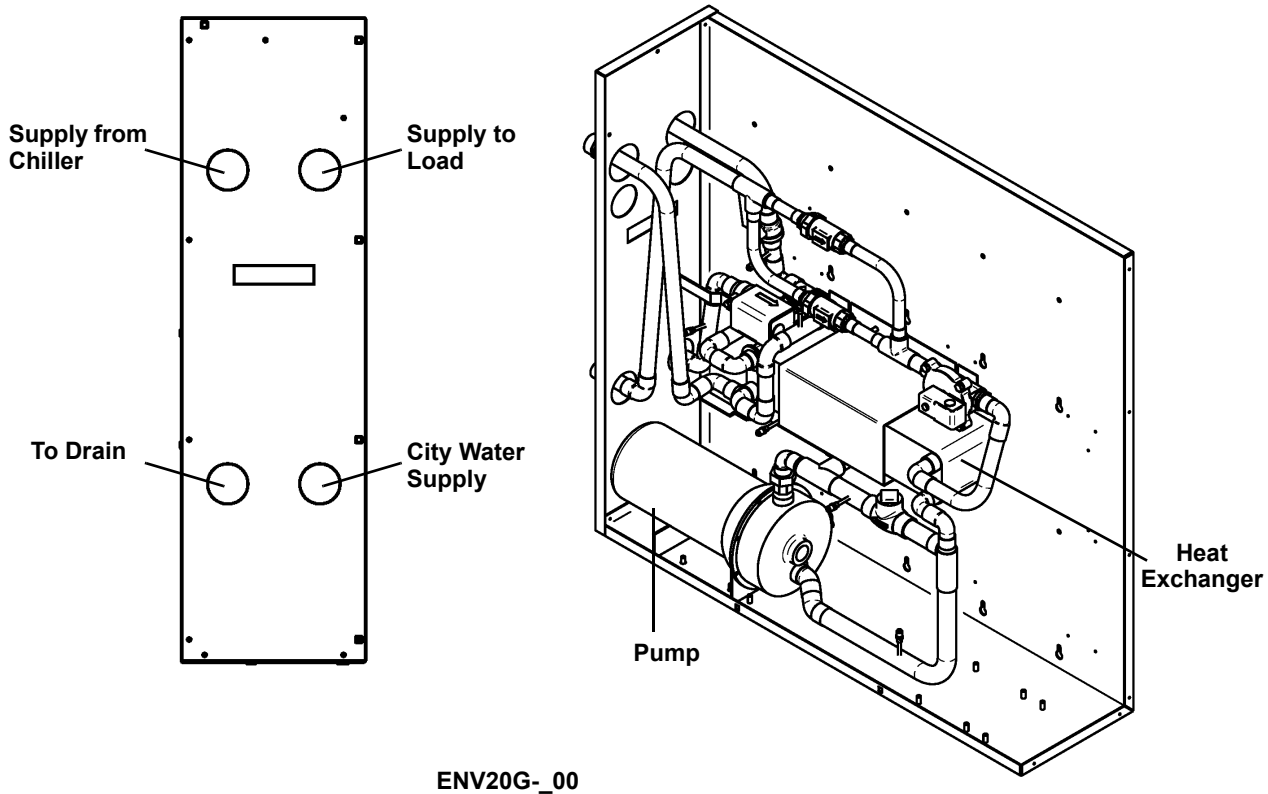


Figure 3 Physical data



ENV05G-_00 / ENV10G-_00



ENV20G-_00

Table 3 Technical data—Envirosource module, 60 Hz

Process Fluid Chiller	PS018A	PS024A	PS036A	PS048A	PS060A	PS096A	PS120A
Model Number	**ENV05G**	**ENV05G**	**ENV10G**	**ENV10G**	**ENV10G**	**ENV20G**	**ENV20G**
Circulating Fluid—Water							
Flow Rate, gpm (l/s)	2.4 (.151)	3.3 (.208)	5.3 (.334)	7.9 (.498)	10.2 (.644)	16.0 (1.009)	20.0 (1.262)
Pressure Drop, feet (kPa)	13.6 (40.65)	24.9 (74.43)	11.7 (34.97)	18.6 (55.60)	30.7 (91.76)	14.2 (42.44)	23.7 (70.84)
Emergency Fluid—Water							
Flow Rate, gpm (l/s)	3.6 (.227)	4.9 (.312)	8.0 (.502)	11.9 (.751)	15.3 (.965)	24.0 (1.51)	30.0 (1.89)
Pressure Drop, feet (kPa)	21 (62.77)	27.7 (82.80)	31.4 (93.85)	51.1 (152.74)	74.4 (222.38)	65.1 (194.58)	73.7 (220.29)

To prevent leaks within the Envirosource Module, the water pressure should not exceed 100 psig.

Table 4 Connection sizes (NPT male)

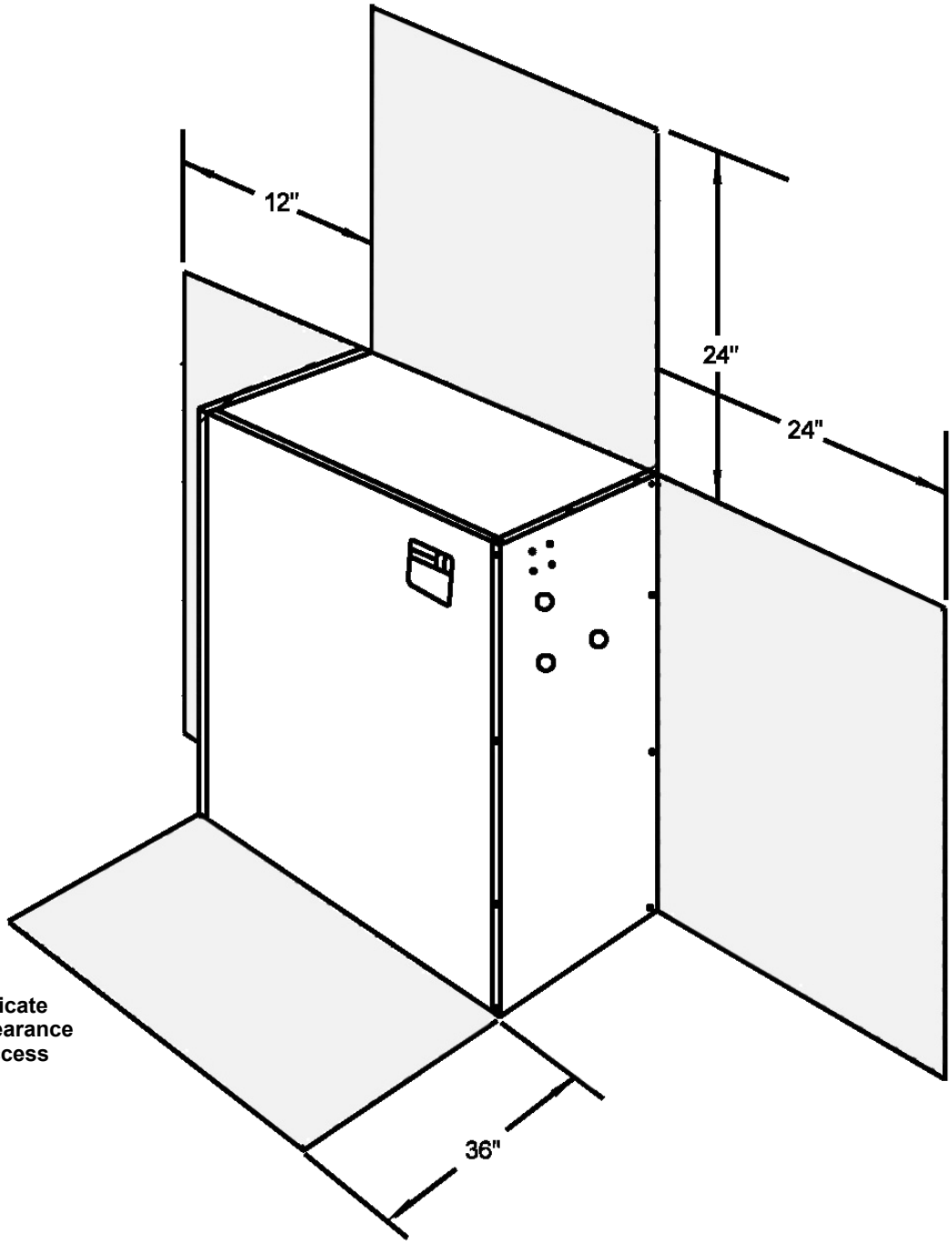
Model	ENV05G	ENV10G	ENV20G
Supply from Chiller	3/4"	1"	1-1/4"
From Emergency Water Supply	1/2"	3/4"	1"
To Drain or Recirculator	1/2"	3/4"	1"
Supply to Load	3/4"	1"	1-1/4"

Table 5 Electrical data, 60 Hz

Electrical Requirements	ENV05G			ENV10G			ENV20G		
	208/230		460	208/230		460	208/230		460
	1 Ph	3 Ph	3 Ph	1 Ph	3 Ph	3 Ph	1 Ph	3 Ph	3 Ph
FLA	7.6	3.5	1.6	8.8	4.6	2.1	--	10.6	4.8
WSA	9.9	4.4	2.0	11.0	5.8	2.6	--	13.6	6.0
OPD	15.0	15.0	15.0	15.0	15.0	15.0	--	15.0	15.0

*Electrical data based on standard pump selection for 40% E.G.

Figure 4 Service clearances



Shaded areas indicate recommended clearance for component access and removal.

ENV05G / ENV10G / ENV20G

Figure 5 Equipment layout

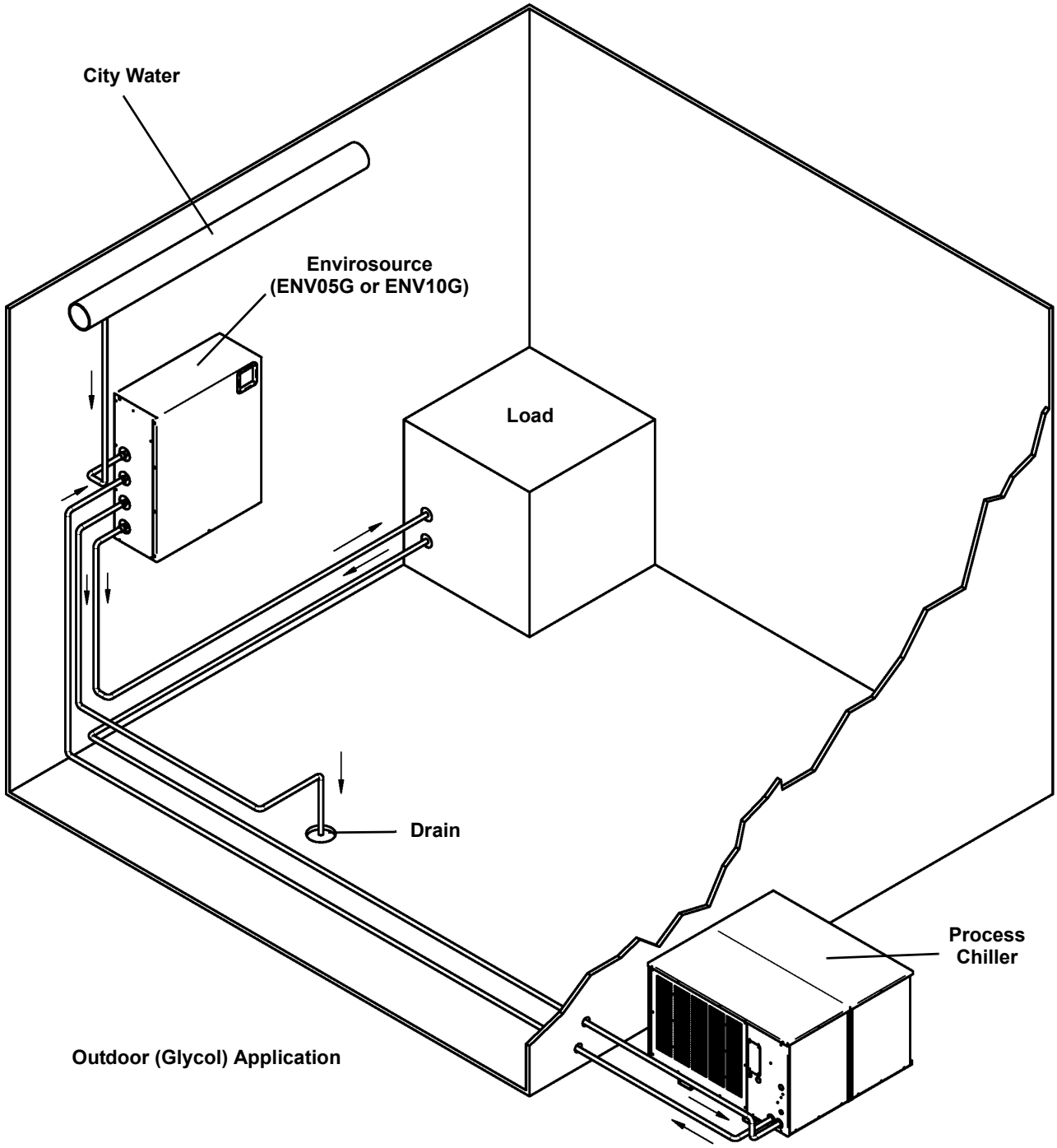


Figure 6 Cabinet dimensions for Envirosource ENV05G and ENV10G

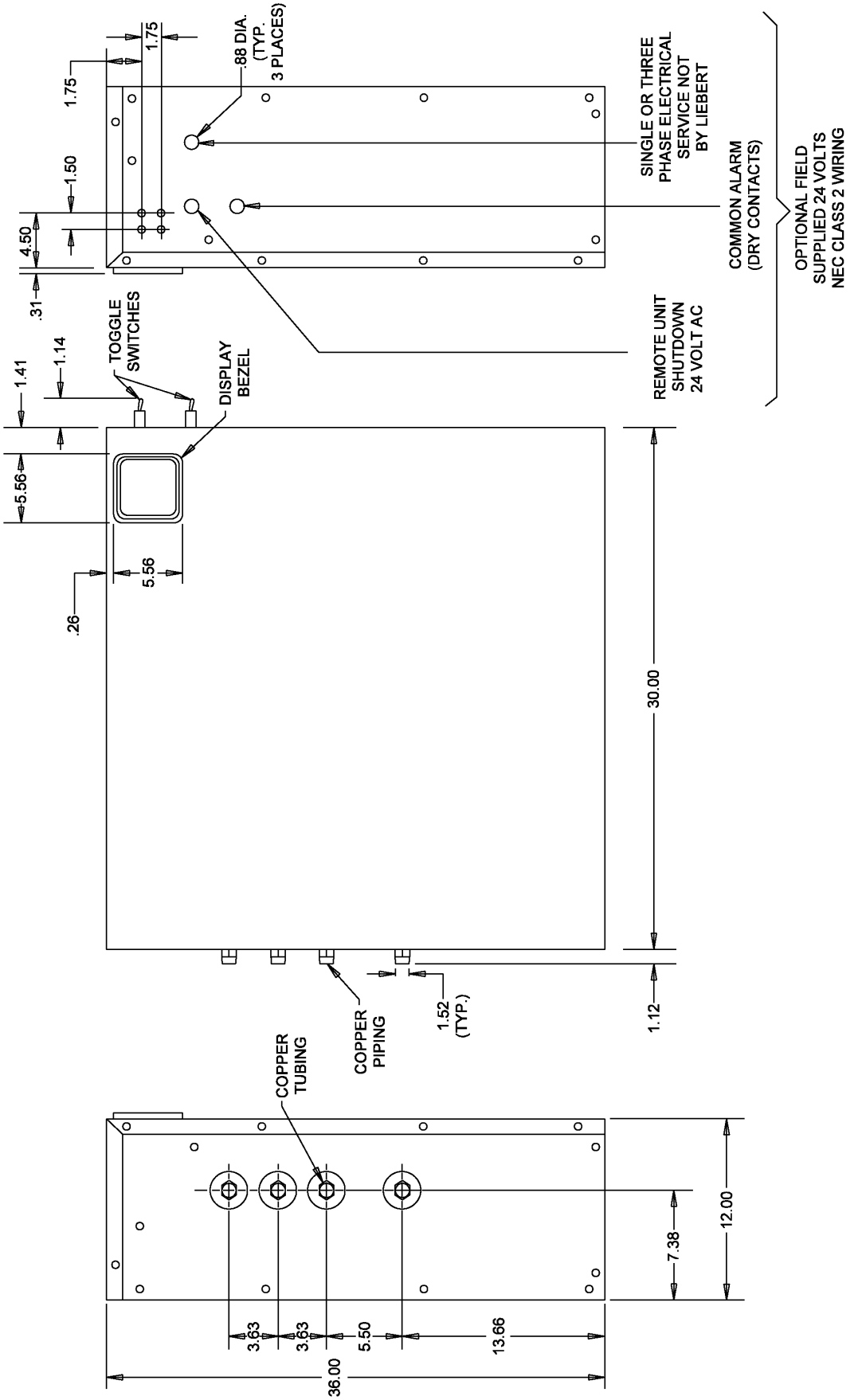


Figure 7 Cabinet dimensions for Envirosource ENV20G

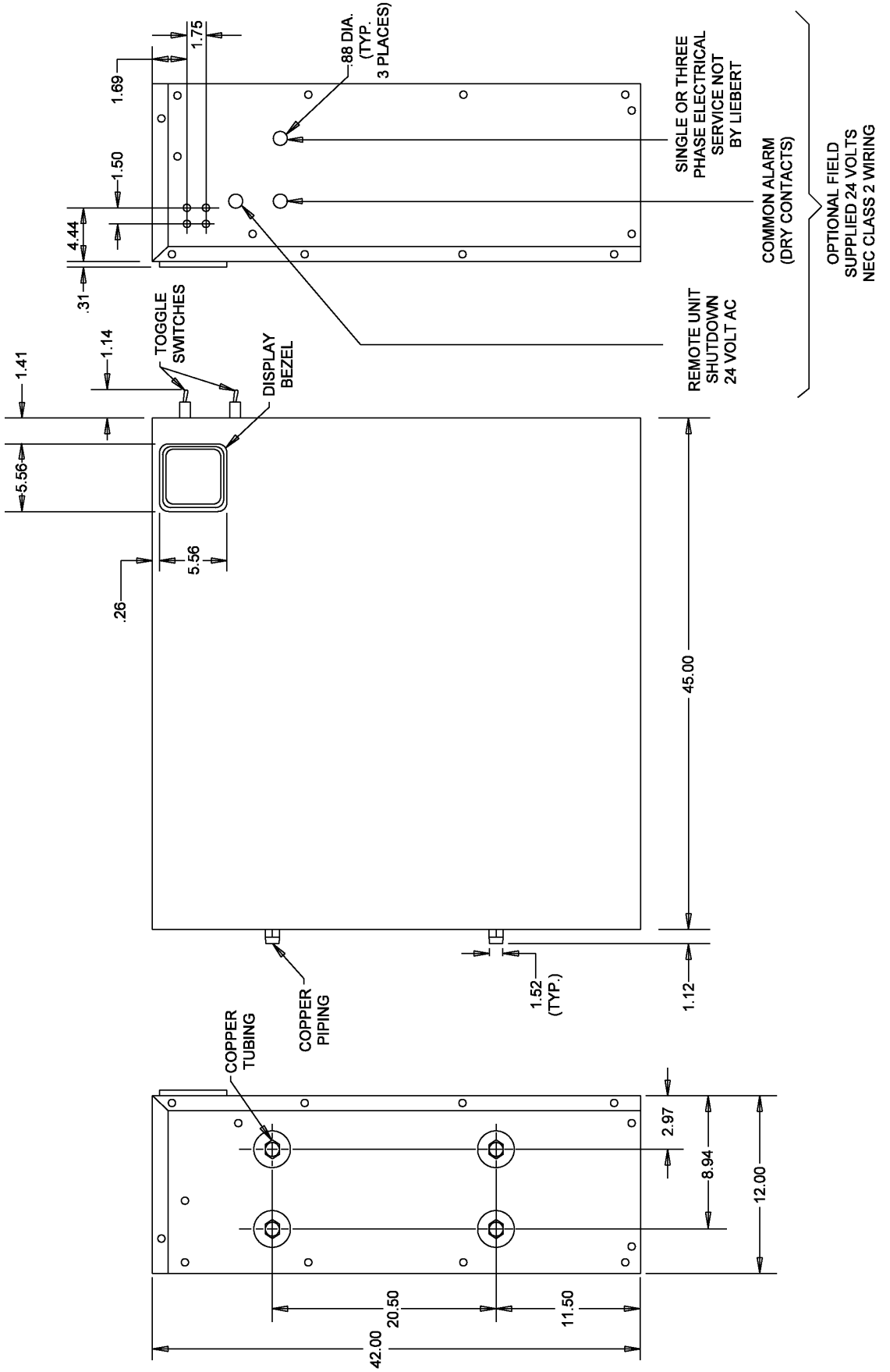
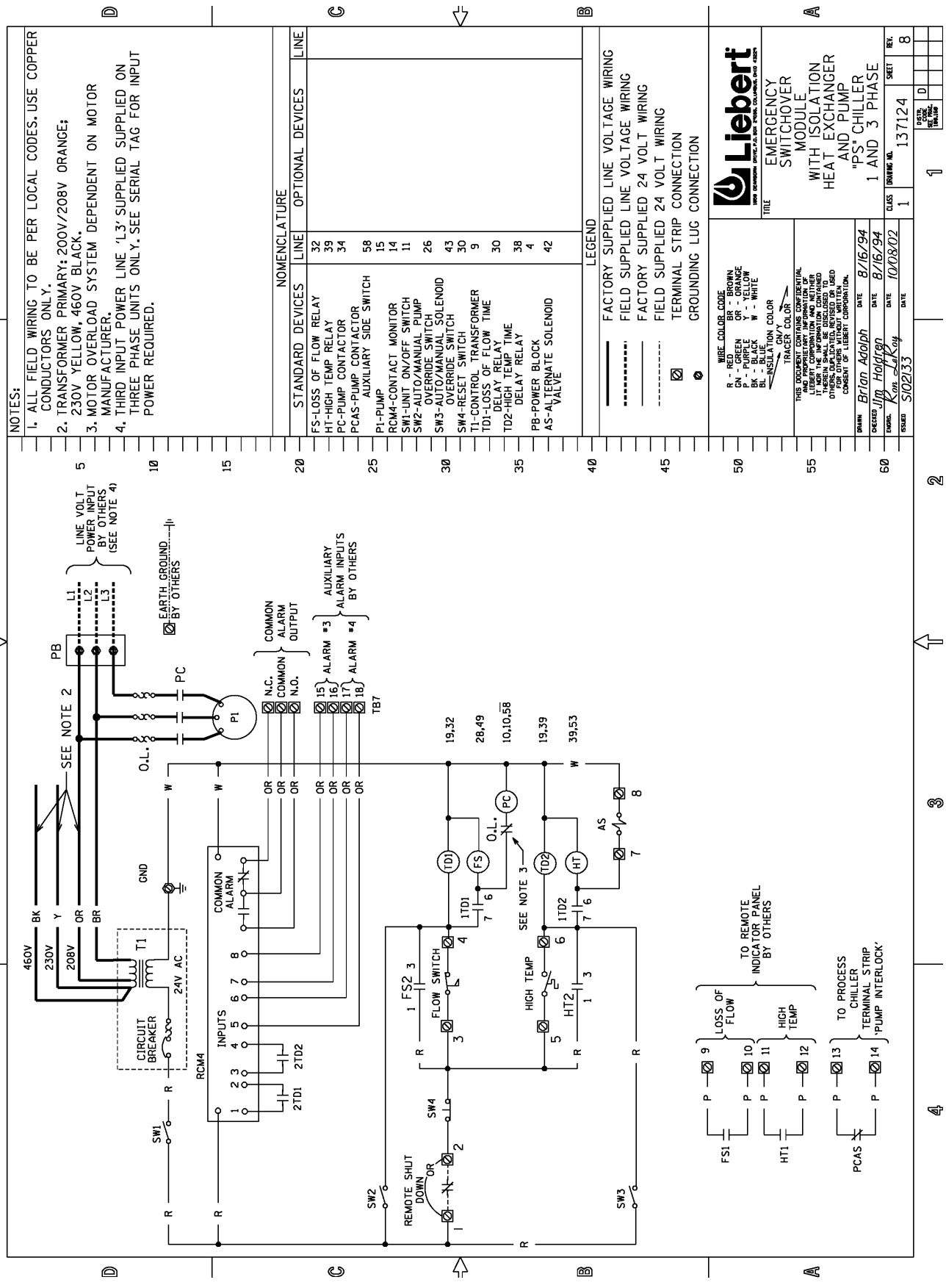


Figure 8 Electrical schematic



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