

Liebert XDWP™

User Manual - 100kW Nominal Capacity, 50 & 60 Hz



GENERAL SAFETY GUIDELINES



CAUTION

This system contains hazardous electrical voltage. Disconnect all power before working within.

Before proceeding with installation of XDWP, read all instructions, verify that all the parts are included, and check the nameplate to be sure the XDWP voltage matches available utility power.

Follow all local codes.



WARNING

The XDWP is top-heavy. Use extreme caution and care when moving and installing this unit.



NOTE

This document shall be used together with site specific documentation and documentation for other parts of the system.



NOTE

Before any action that could cause a disturbance in the XD system's cooling function is begun, the facility manager MUST be informed. In addition, after the action is taken and the work is finished, the facility manager MUST be informed.

Figure i Model number nomenclature

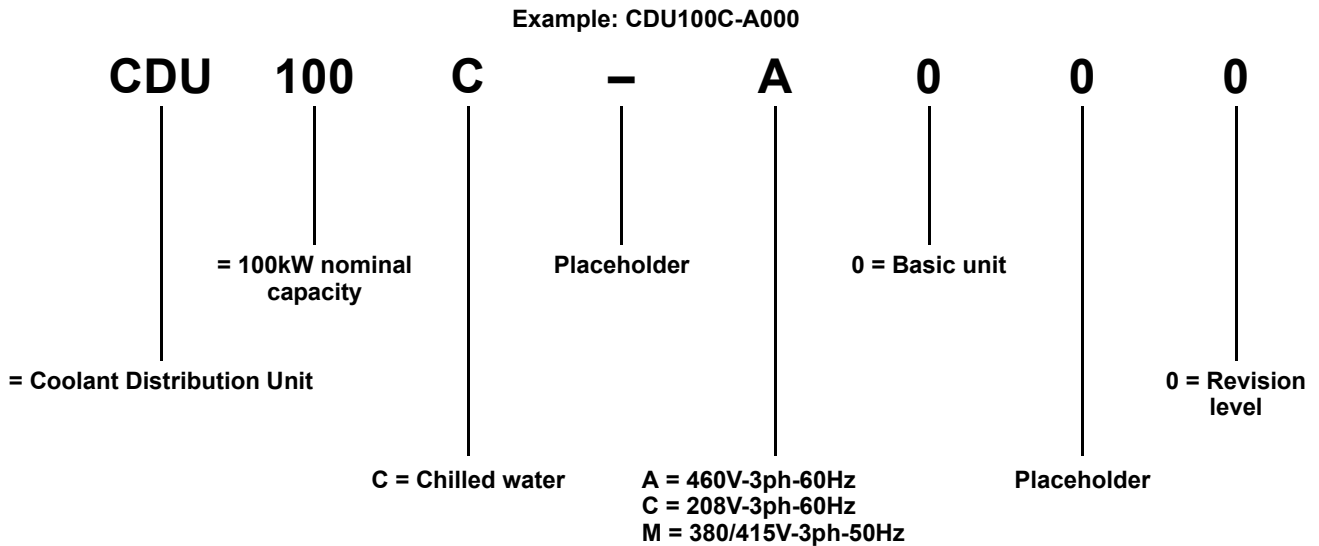


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1.0 PRODUCT DESCRIPTION

1.1 General Product Information

1.1.1 Product/System Description

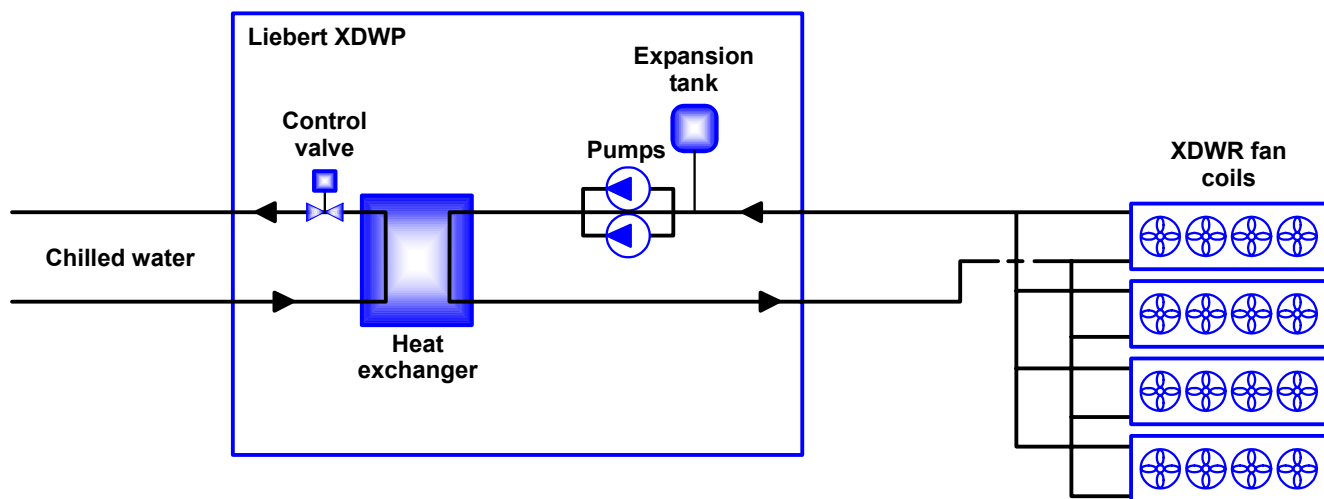
The Liebert XDWP is an interface between the building chilled water system and the XDWR coolant circuit. It is designed to circulate and control coolant to XDWRs that are installed on racks with heat dissipating equipment. The unit consists of a cabinet that includes a heat exchanger, two circulating pumps (for redundancy), a flow switch, a control valve, an expansion tank, controls, valves and piping. See **Figure 1**.

The control in the XDWP monitors room conditions and controls the leaving fluid temperature to XDWR to always be above the room dew point, to prevent coil condensation.

All functions, such as switching pumps and fluid temperature control, are automatic.

The XDWP is rated for 100 kW (341,300 BTU/h) of cooling.

Figure 1 Generic system schematic



1.2 Checking and Unpacking

Check the received materials to be sure all required assemblies and parts have been received. If you discover any external damages, report them to the shipping company. If you later find any concealed damages, report it to the shipping company and your local Liebert representative.



NOTE

The XDWP should always remain in a vertical position.

1.3 Equipment Inspection

When the unit is delivered, inspect all items for visible and concealed damage. Damage should be immediately reported to the carrier and a damage claim filed with a copy sent to Liebert or to your sales representative.

1.4 Equipment Handling



WARNING

The instructions listed below are to be followed when handling this unit with or without the skid. This unit has the potential to tip over if handled improperly, which would damage the unit and could injure or kill personnel.



CAUTION

Personnel should be properly trained and certified to move and rig equipment.

1.4.1 Handling With Skid

- Always keep the unit upright, indoors and protected from damage.
- If possible, transport the unit using a forklift truck. Otherwise use a crane with belts or cables. In either case, do NOT press on the top edges of the packaging.
- If using a forklift, make sure the forks (if adjustable) are spread to the widest allowable distance to still fit under the skid.
- When moving the skidded unit with a forklift truck, do not lift the unit any higher than 6" (152mm) off the ground. If circumstances require the unit to be lifted higher than 6" (152mm), great care must be exercised and all by-standing personnel are to be no closer than 20' (5m) from the lift point of the unit.



CAUTION

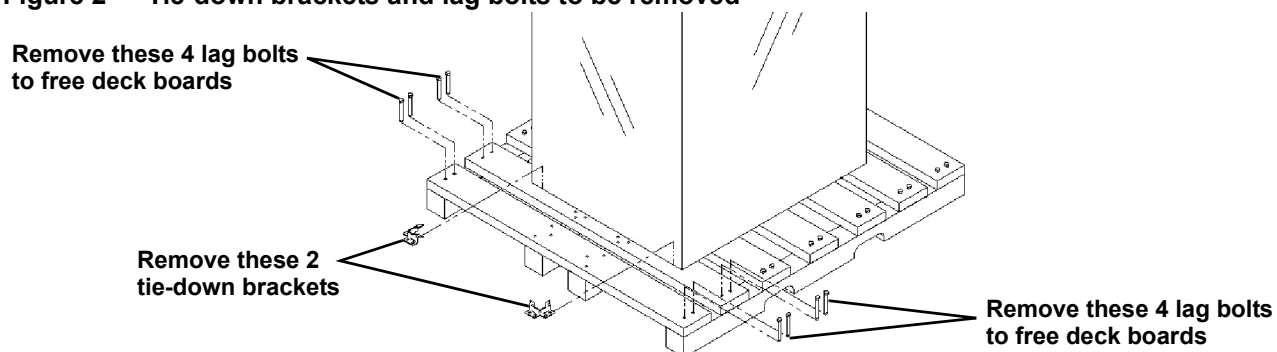
Attempting to move the XDWP while it is still on the skid through a standard doorway will damage the unit. The XDWP on the skid will not fit through a standard doorway, which measures 83" (2108mm) tall.

1.4.2 Removal from Skid

Liebert recommends using dual hand trucks or a similar method to remove the XDWP from the skid. This is to ensure that both ends of the unit are firmly secure and to provide a good means of unit mobility.

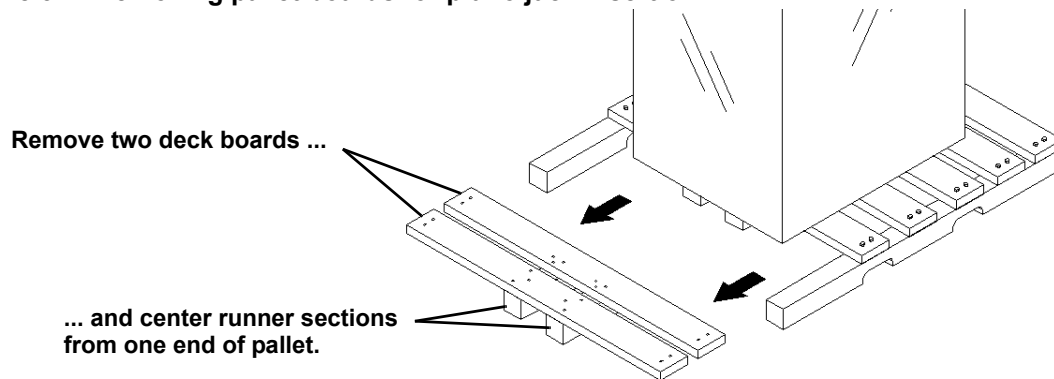
1. Always keep the unit upright, indoors, and protected from possible damage.
2. Remove the exterior packaging. Leave the plastic bag over the XDWP until the unit has been moved to its final location. The bag will protect the painted panels against scuffing.
3. Remove two (2) corner tie-down brackets from one side of the unit, on a non-runner notch side of the pallet. Remove eight (8) lag bolts from two (2) end deck boards on the same end where the tie-down brackets were removed (refer to **Figure 2**).

Figure 2 Tie-down brackets and lag bolts to be removed



- Remove the two (2) end deck boards from one end of the pallet and the attached, notched section of the center runners (refer to **Figure 3**).

Figure 3 Removing pallet boards for piano jack insertion



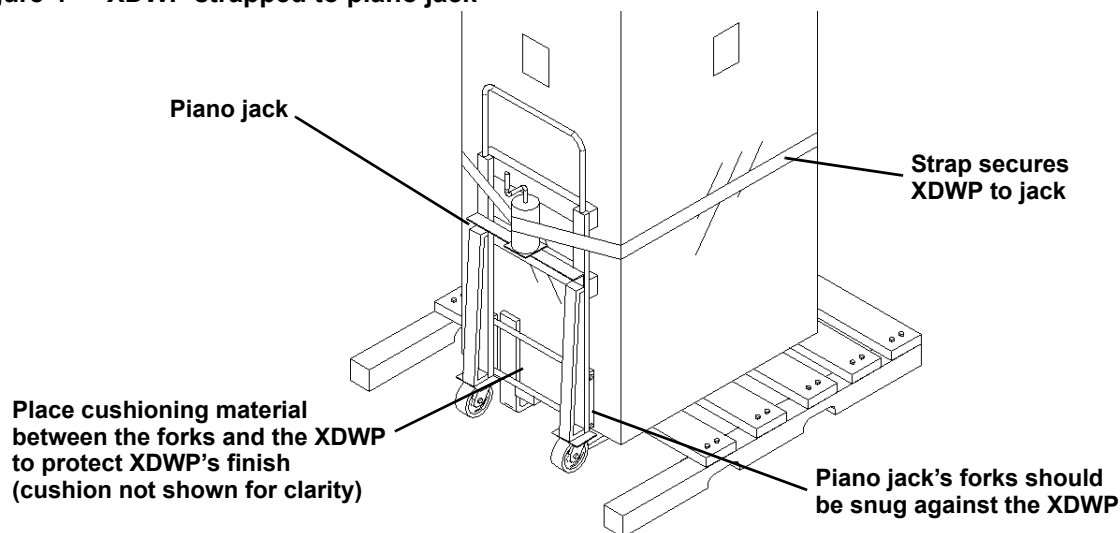
- Place a piano jack with its forks snugly against the bottom of the unit and strap the XDWP securely to the jack (refer to **Figure 4**).



NOTE

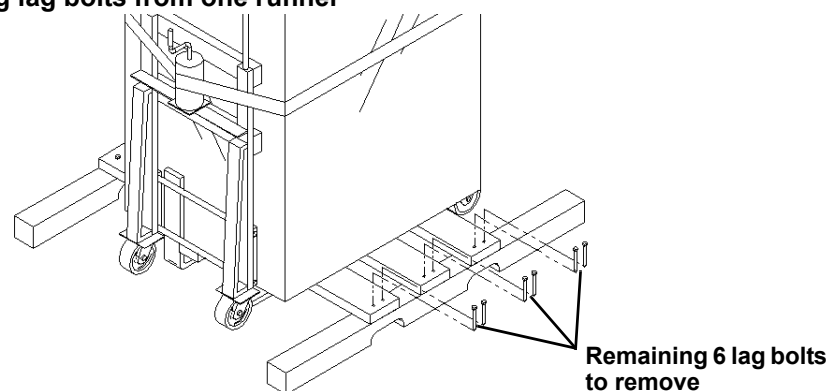
Place a mover's blanket or other cushioning material between the jack and the unit's side panels.

Figure 4 XDWP strapped to piano jack



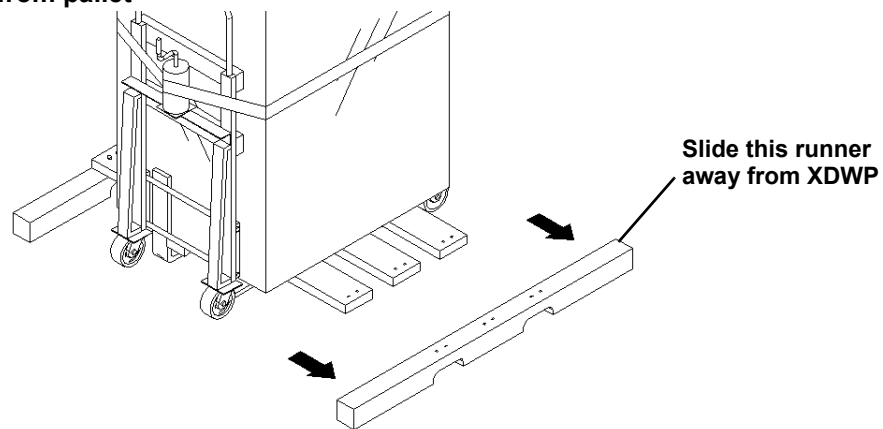
- Repeat **Steps 2, 4** and **5** for the opposite side of the unit. When these steps have been completed, the XDWP will be supported by two piano jacks, one on either side.
- Remove all of the remaining lag bolts from one (1) of the pallet's outside runners (see **Figure 5**).

Figure 5 Remove remaining lag bolts from one runner



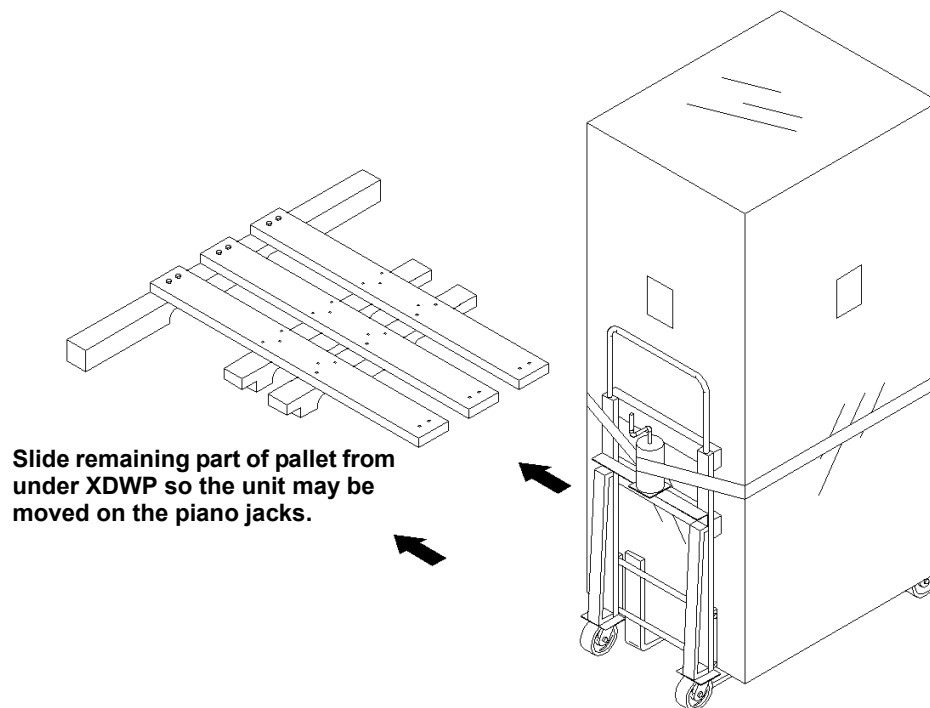
- Remove the runner from which all lag bolts have been removed (refer to **Figure 6**).

Figure 6 Remove runner from pallet



- Using the pallet jacks, raise the secured unit to the highest point that the piano jacks will allow. Once the unit has been raised, slide the remainder of the pallet from under the XDWP (see **Figure 7**). Lower the XDWP so that its base is approximately 1" (25.4mm) off the ground.

Figure 7 Sliding pallet from under XDWP



1.4.3 Removing Piano Jacks

Once the unit has been moved to the installation location, Liebert recommends the following method to remove the piano jacks:

- Lower the unit as far as the piano jacks will allow.
- Undo all strapping holding the piano jacks to the unit.
- Remove all cushioning material used to protect the unit from the straps and the piano jacks.
- Use a pry bar or other lever to lift one side of the XDWP enough to allow removal of the piano jack.
- Repeat **Step 4** to remove the piano jack on the opposite side.
- Remove the plastic bag.

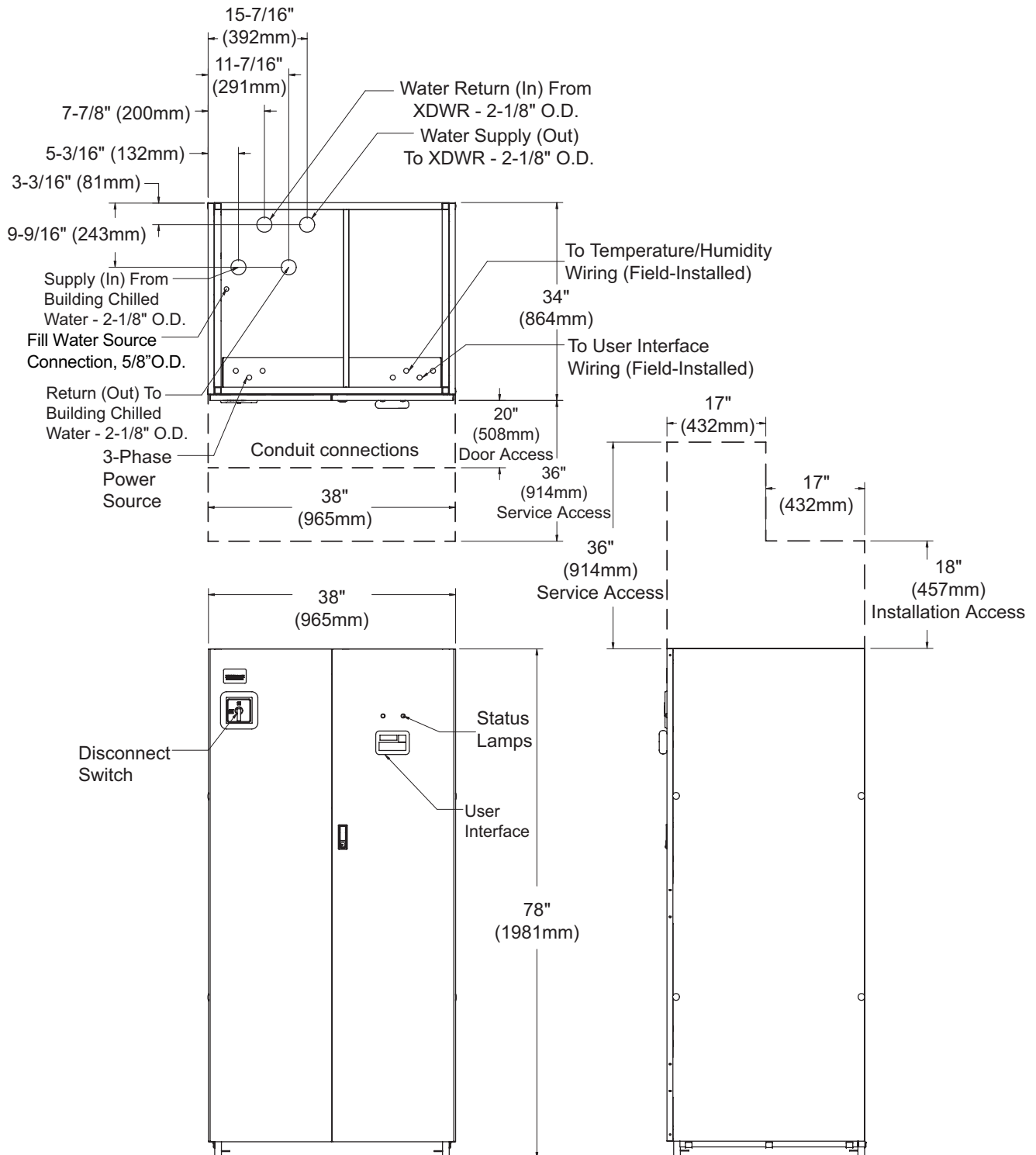
1.5 Mechanical Considerations

1.5.1 Positioning the XDWP

Install the XDWP according to the site-specific documentation and secure the unit to the floor.

The XDWP may be installed close to a wall or another XDWP. To provide access to all components in the unit, however, the front of the unit must have at least 3 ft. (0.9m) free service area.

Figure 8 Dimensions, access points and external features



1.6 High Voltage Connections

Make sure the actual supply voltage and frequency correspond to the voltage and frequency indicated on the XDWP's rating plate.

Connect cables for high voltage supply to the electrical box in the XDWP according to **Figure 11** and make sure that the phases are correctly connected.

The unit must be installed in accordance with national wiring regulations.

WARNING

Risk of electric shock. Can cause injury or death.

Disconnect all local and remote electric power before working within the unit.

CAUTION

Sharp edges and heavy parts may cause personal injury.

Wear gloves to prevent injury to hands.

Damage to wiring or components may make unit unsafe to operate.

Use caution when installing wiring to prevent damage to factory wiring.

Install protective bushings in wiring knockouts as required

Do not disturb factory wiring or route field-installed wiring over electrical terminals.

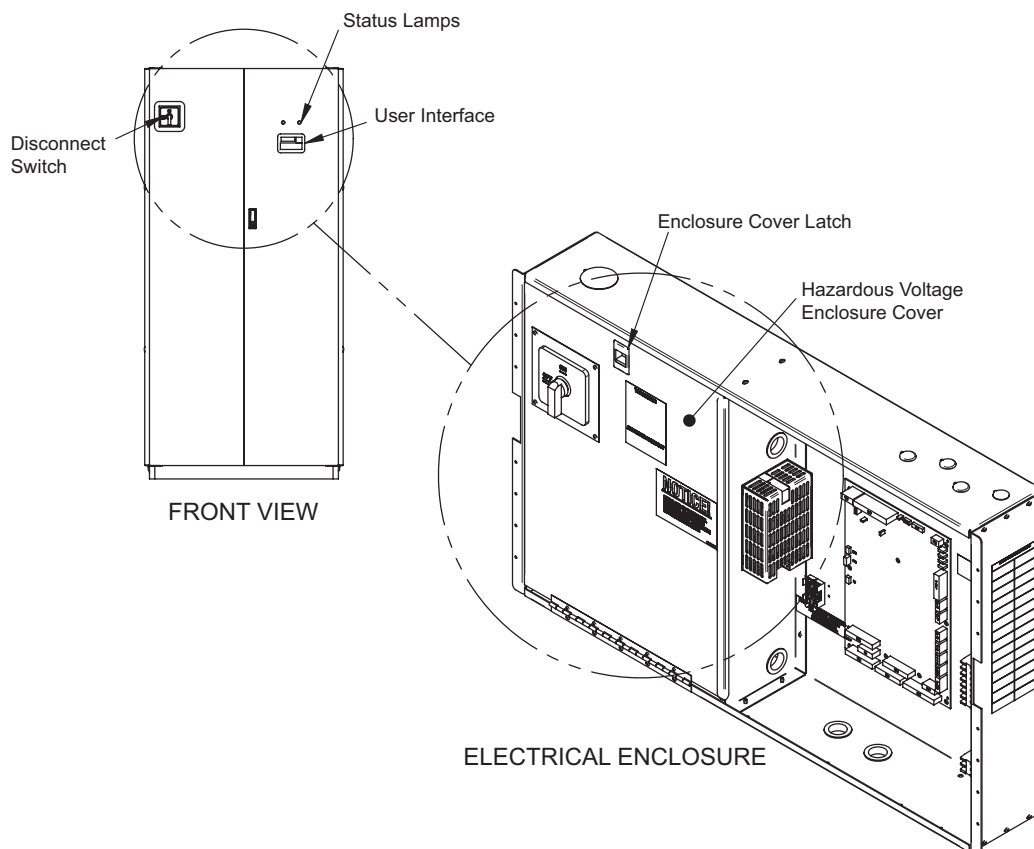
Use NEC Class 1 wiring for all hazardous voltage electrical power supplies.

Check and retighten all wiring connections before starting.

1.6.1 Connecting High-Voltage Cables

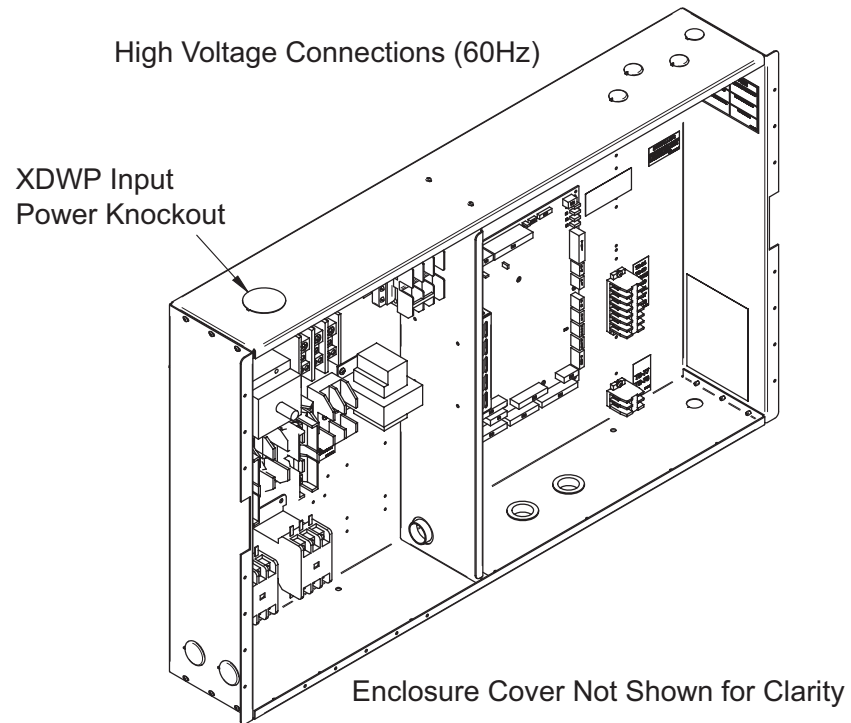
1. Turn the XDWP's disconnect switch to the Off position (see **Figure 9**). Open the front doors and push down on the enclosure cover latch to open the hazardous voltage enclosure cover.

Figure 9 Front view of XDWP and electrical enclosure



- Determine which knockouts in the electrical enclosure will be used and remove them (see **Figure 10**).

Figure 10 Electrical enclosure knockout locations for field wiring



- Route the input hazardous voltage electrical power wiring through the top left knockout (see **Figure 10**) to the disconnect switch L1, L2 and L3 (see **Figures 11** and **12**). Observe proper phasing.
- Connect the ground wire to the ground lug (see **Figures 11** and **12**), which is in the middle left of the enclosure.

Figure 11 High voltage connections - 60Hz

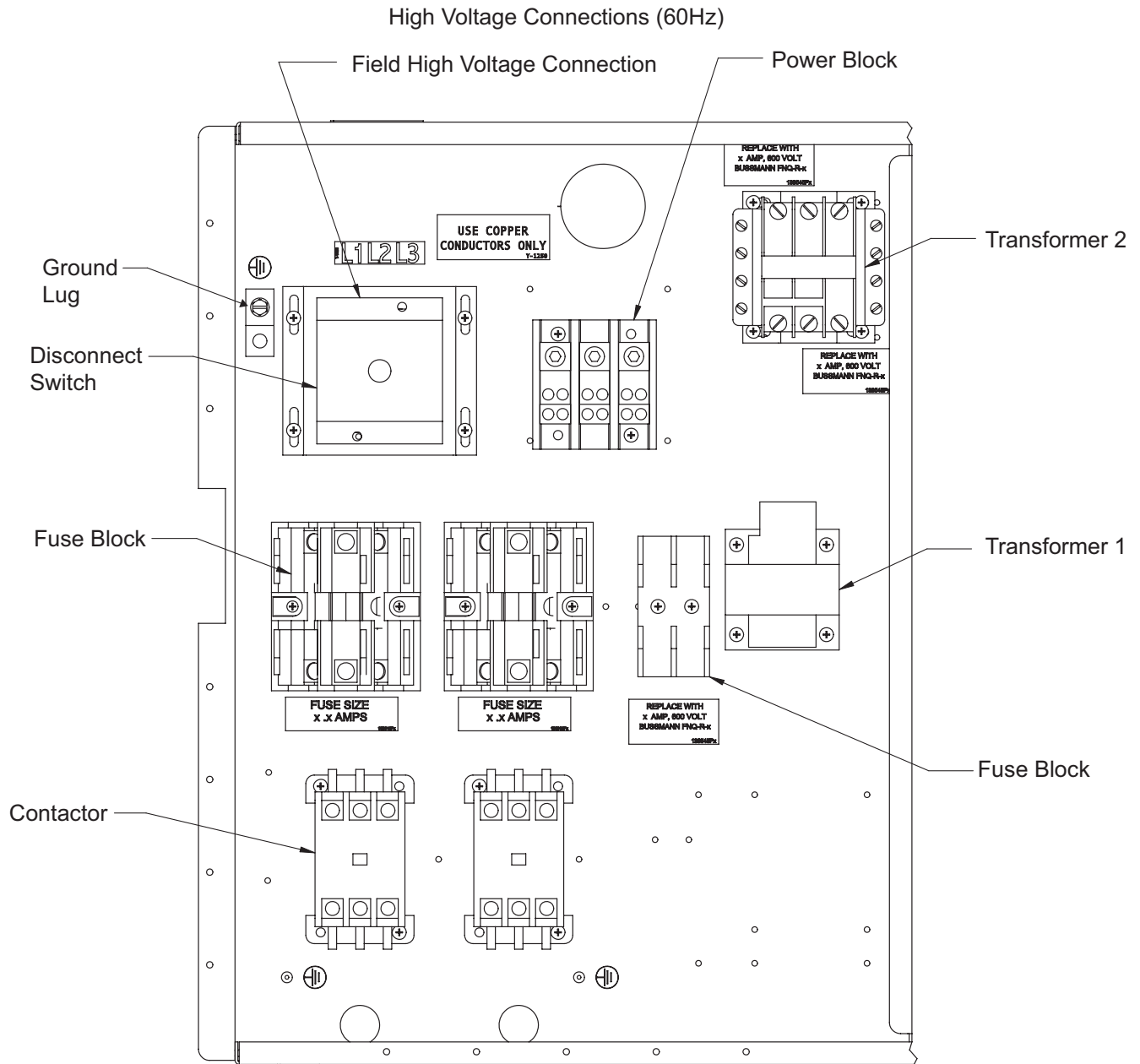
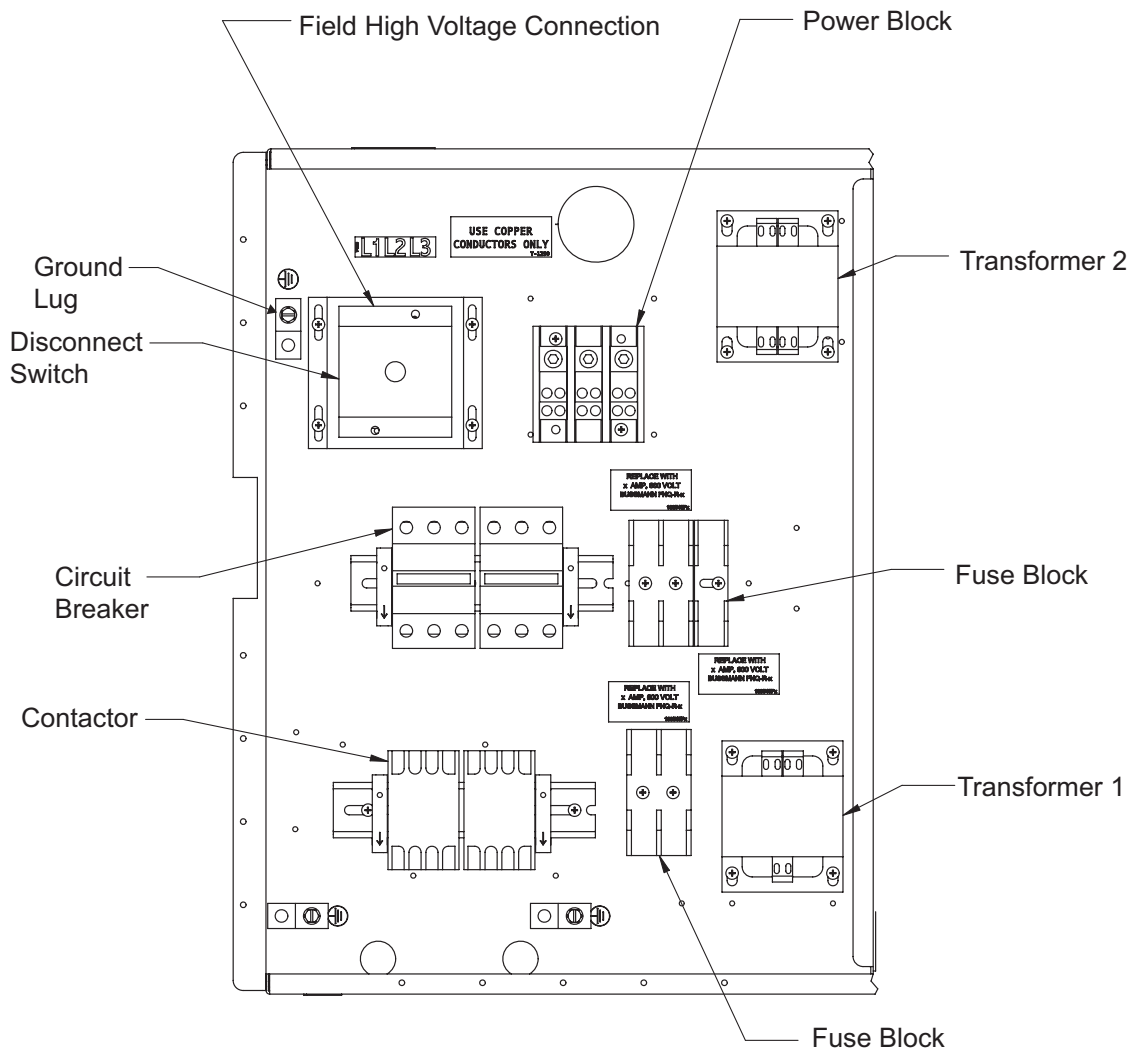


Figure 12 High voltage connections - 50Hz

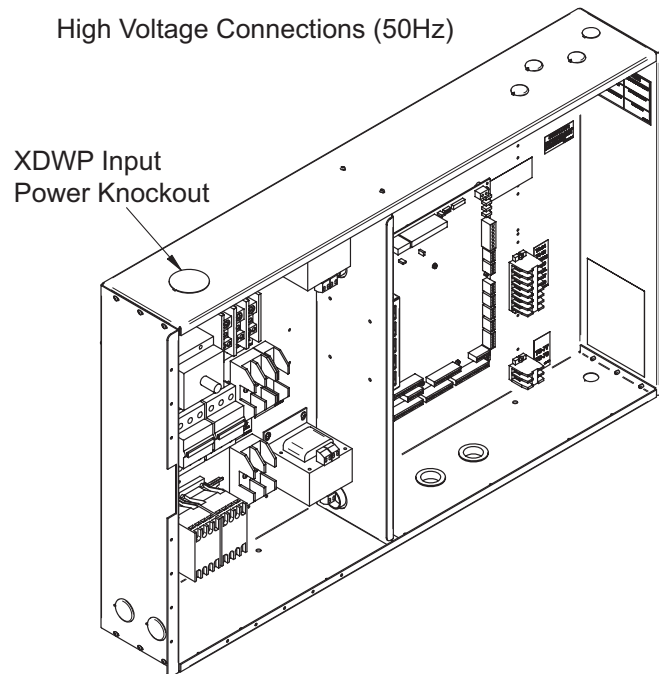


1.7 Extra Low Voltage (ELV) Connections

ELV power output is 30V and 100VA or less.

1. Turn off all unit power before connecting cables or wires. Failure to do so may damage this equipment (refer to **Figure 13**).
2. Route low voltage electrical connections through the appropriate knockouts as indicated below.
3. User interface requires four thermostat-type wires (jacketed) connected to the control board (see **Figure 14**).

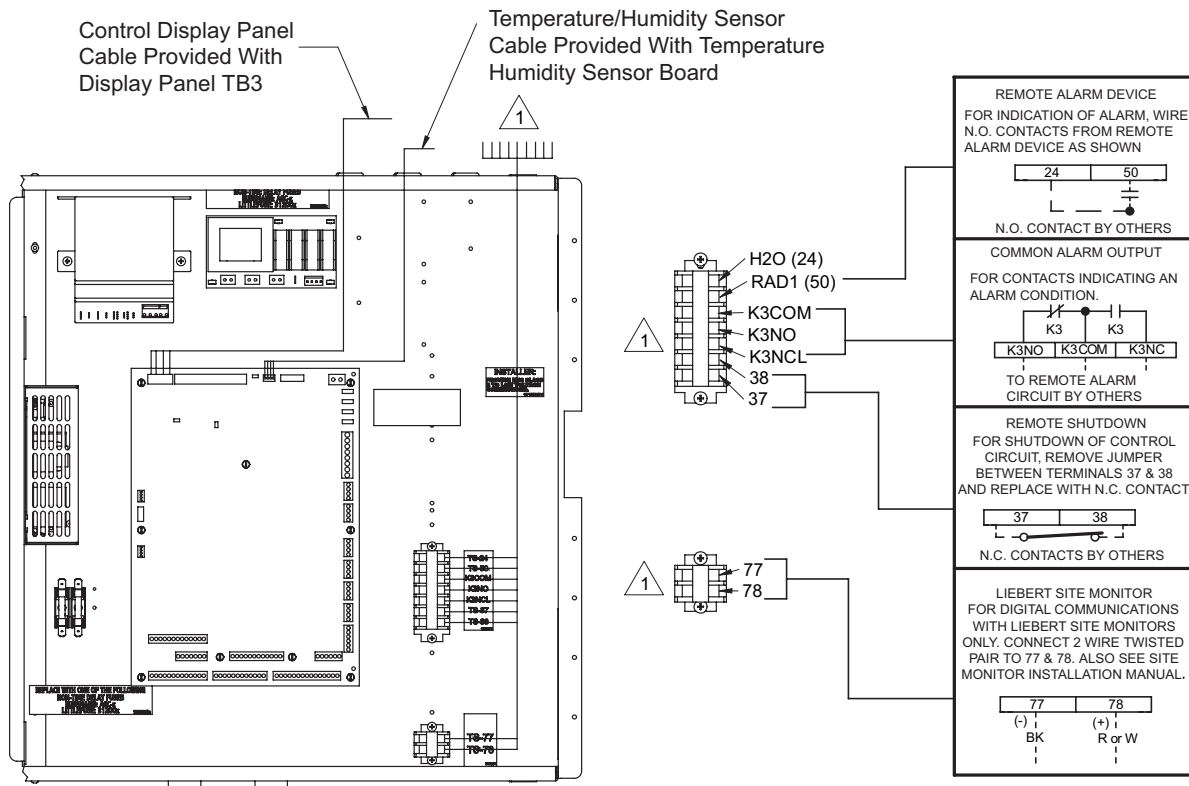
Figure 13 Electrical enclosure knockout locations for ELV



Field Connections—All Units

- Connect the control display panel cable to terminal block TB3 terminals 1 through 4 on the XDWP control board as shown (refer to **Figure 14**). The display panel may be mounted in the XDWP front right door if the XDWP is located in the area that it conditions. The display panel must always be installed in the conditioned space.
- Connect the provided remote temperature / humidity sensor extension cable to the factory-installed cable connected to P16 on the control board. Install this sensor in the higher-temperature portion of the cold aisle in the space conditioned by the XDWR units connected to the XDWP.
- Place the sensor on the RETURN AIR side of the primary air mover (e.g., Liebert Deluxe System 3) or directly in the cool aisle. Do not install the sensor where ambient air may cause false readings, for example, near unsealed doors, windows and similar areas.

Figure 14 XDWP ELV field connection points
Extra Low Voltage (ELV) Connections



NOTES:

- 1 Control wiring must be installed in accordance with the National Electrical Code (NEC) Class 2 Circuit.

2.0 PIPING

2.1 Connection Sizes

The copper pipe connections on the XDWP are as follows.

Building Chilled Water Supply	2-1/8" OD
Chilled Water Return	2-1/8" OD
Coolant Supply	2-1/8" OD
Coolant Return	2-1/8" OD
Fill Water Source	5/8" OD

2.1.1 Recommended Pipe Size

Connect the main pipes between the XDWP and the XDWR according to site-specific documentation and the configuration guide for the XDWR unit.

Elbows and restrictions should be minimized to get good fluid flow.

Table 1 Supply and return requirements for XDWR loop

Nominal Pipe Size inches (mm)	Maximum Total Equivalent Length ft. (m)	Piping Material
2.5 (64)	75 (23)	Type L Copper
3 (76)	150 (46)	Copper or Sch 40 Steel
3.5 (89)	300 (91)	Copper or Sch 40 Steel

2.2 Air Bleeders

Install air bleeders at each high point in the piping circuits.

2.3 Insulation

To avoid the risk of condensation, all piping between the XDWP and the XDWR that are not in a conditioned space shall be insulated.

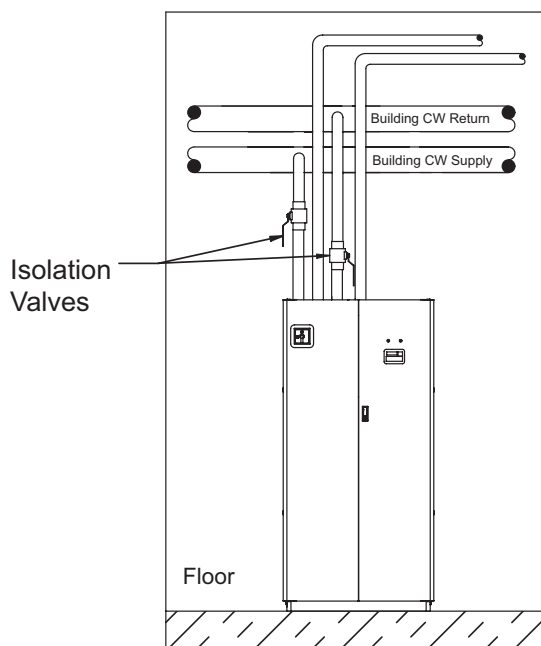
2.4 System Schematic

For complete system schematic for a system with the XDWP, see site-specific documentation and manuals for the XDWR.

2.5 Piping Details—Shutoff/Isolation Valves

To allow for maintenance of the XDWP, isolation valves are installed on the supply and return pipes for both the chilled water circuit and the coolant circuit connected to the XDWP (see **Figure 15**).

Figure 15 Piping details



NOTE

If the chilled water supply is an open loop system, Liebert strongly recommends installing a 20-40 mesh strainer on the supply line of the XDWP to prevent particles and contaminants from entering the heat exchanger.

2.6 Bypass Flow Controllers

The XDWP is designed for a nominal cooling module side circuit flow of 75 gpm (284 lpm). However, to ensure optimal functionality, the flow should be kept above 18 gpm (68 lpm).

If fewer than three XDWR modules are connected to the XDWP circuit, fixed-flow bypass controllers must be installed between the supply and return piping in parallel with the modules (see **Table 2**). Each fixed-flow bypass controller has a nominal flow of 6 gpm (23 lpm).

If the XDWP is circulating cold water to other devices—for example, some models of IBM's Rear Door Heat eXchanger—installing minimum-flow bypass controllers in a similar way may be required to keep the flow in the circuit above 18 gpm (68 lpm). These minimum-flow bypass controllers must be installed between the supply and return piping in parallel with the modules.

The bypass flow controller is soldered between the supply and return distribution piping that connects the XDWP with the cooling modules. The bypass may be installed wherever convenient in the distribution piping, but it should be placed so that air is not trapped inside. The fixed-flow bypass controller must be protected from excessive heat during installation. Do not use hard solder. Soft solder is recommended. For convenience, the fixed-flow bypasses may be installed with optional shutoff valves to deactivate the bypass flow controllers when more modules are added.

Table 2 Fixed-flow bypass controller requirements

Number of XDWR Units on XDWP Circuit	Number of Fixed-Flow Bypass Controllers Required P/N 184181G1 (Nominal Flow 6 gpm [23 lpm])
1	2
2	1
3-12	0

2.7 Filling Instructions

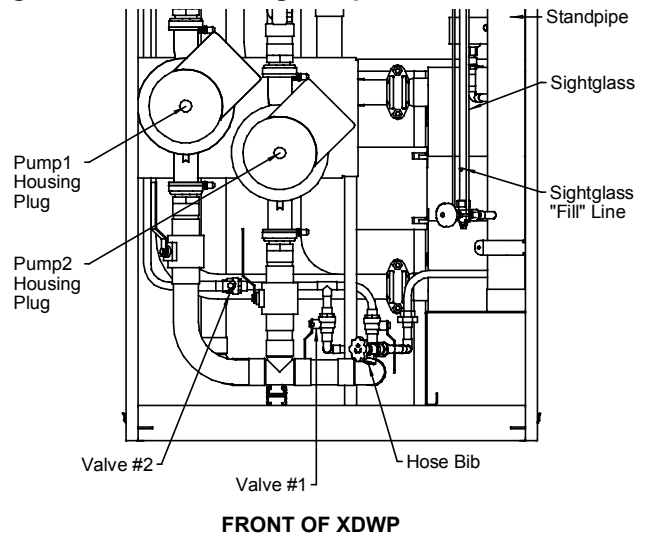
This section provides detailed instructions on how to properly fill the XDWP.

2.7.1 Check for Proper Installation of Components and Workmanship

1. Confirm that the flow directions of field-installed components are correct.
2. Confirm that all isolating valves are open (keep the hose bib valve closed when filling).
3. Confirm that all auto air vents are closed (tighten caps if applicable).
4. Test the water quality when filling the system. Refer to these desired parameters for minimum corrosion and erosion:

Conductivity	Maximum = 500 μ S/cm
PH-value	Minimum = 7.0
Suspended matter	No visible particles Maximum = 30 mg/L
Taste and smell	Normal

Figure 16 XDWP filling components



2.7.2 Conduct Air Pressure Test

1. Turn Off power to the unit.
2. Set the pressure at 150 psig (1034kPa; 10.3 bars) maximum for at least 30 minutes or according to local codes.
3. Repair any leaks if necessary.

2.7.3 Water Fill Line Connection



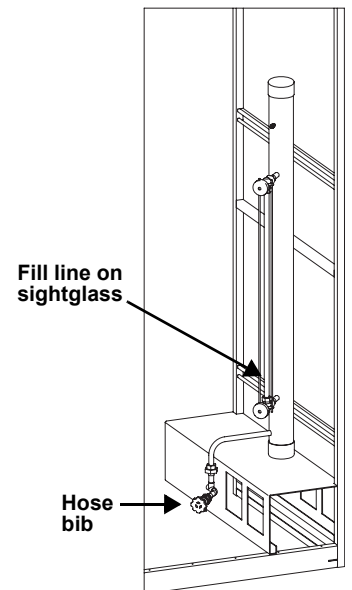
CAUTION

Check with local codes for proper connection to potable water and EPA conformance.

Do NOT use the hose bib at the bottom of the unit to fill the system (see **Figures 16 and 17**).

1. When filling the system, use only water that can be classified and used as drinking water.
 - a. Open all vents (loosen caps if applicable) to allow air to escape during filling.
 - b. Remove the Schrader pin in the valve at the top of the standpipe (see **Figure 17**) to obtain 0 psig pressure.
 - c. Open Valve #1 and #2 to allow the system to fill (see **Figure 16**).
 - d. When the water has reached the FILL line in the sightglass tube of the standpipe, immediately close Valve #1 (see **Figure 16**) to isolate the standpipe from the system.
 - e. Replace the Schrader pin in the valve at the top of the standpipe.
2. Bleed air thoroughly (keep Valve #1 closed to isolate the standpipe from the system).
 - a. Depress pins at all vents.
 - b. Manually depress pins at all Schrader vents on each rack (see **Figure 18**).
 - c. Manually vent at pump housing plugs (see **Figure 16**).
 - d. Continue to vent until the system is full, then close Valve #2.

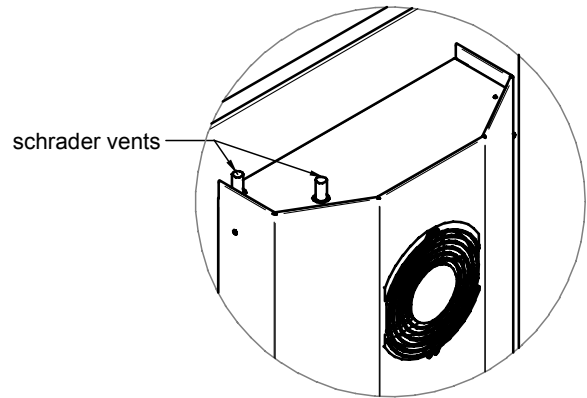
Figure 17 Standpipe filling components



3. Open Valve #1 to reconnect the system to the standpipe (fluid level in the clear tube should rise above the fill, but below NORMAL level).
 - a. If the fluid level is above the NORMAL line, release water by opening the hose bib until the level reaches the NORMAL line.
 - b. If the fluid level is below the NORMAL line, open Valve #2 until the level reaches the NORMAL line.
4. Turn the system on (pumps will be in operation) and continue to vent air for 24 hours to remove as much air as possible.

Note: Add water as necessary to maintain a normal level reading on the clear tube.
5. When the system is mostly air-free, close ALL air vents (tighten caps securely); this includes vents at each rack (**Figure 18**) and auto air vents on the main headers.
6. Conduct a Fluid Pressure Test.
 - a. Shut off the ball valve on the standpipe pressure gauge to avoid overpressurization (see **Figure 17**).
 - b. Pressure test the system with water at city pressure for six hours or according to local codes.
 - c. Check for leaks.
7. Add a water corrosion inhibitor.
 - The use of a closed system treatment (CST) is strongly recommended. CST is available from TERLYN INDUSTRIES at 800-200-4112 or www.terlyn.com.
 - Additional treatment might be required after six to 12 months of operation, depending on the quality of your water.

Note: Many parameters contribute to water corrosion and erosion, and the requirements stated above do not guarantee 100% corrosion and erosion prevention. However, when these parameters are met and a corrosion inhibitor is used, the possibility of corrosion and erosion in the closed loop water system should be minimized, therefore maximizing the life expectancy of the system.
8. Refill the system by following **Steps 1** through **5**, then go to **Step 9**.
9. Turn the unit On by pressing the **I/O** key.

Figure 18 Detailed view of XDWRs (top)

2.8 Checklist for Proper Installation

1. Unpack and check received material.
2. Position the XDWP and secure to the floor.
3. Wire high-voltage connections.
4. Wire low-voltage connections.
5. Connect building chilled water piping to the XDWP.
6. Connect XDWR piping to the XDWP.
7. Make sure air vents are installed at high-point of the system.
8. Make sure isolation valves are installed on the mains and branch piping.
9. Pressure test air.
10. Fill the system with water.
11. Bleed air out of the system.
12. Pressure test fluid.

3.0 OPERATION

3.1 Feature Overview

The XDWP controls the coolant temperature to a XDWR system above the room dewpoint, preventing coil condensation.

The microprocessor control for the Liebert XDWP unit features an easy-to-use menu-driven LCD. The menus, control features and circuit board details are described in this section.

Figure 19 User interface



Active alarms are displayed on the LCD screen and sound an audible beep. To silence an alarm, press the Alarm Silence/Help key as prompted on the display.

Setpoints, DIP switch settings and other selections were made during factory testing of the unit based on typical operating experience. (Other default selections were made according to options included with the unit.)

ADJUST THE FACTORY DEFAULTS ONLY IF THEY DO NOT MEET YOUR SPECIFICATIONS.

Allowable ranges are displayed by pressing the Help key. A password will be required (if enabled) to change setpoints, time delays, etc.

The display normally shows the leaving coolant temperature on the first line and alternates between the dew point and the number of alarms present on the second line.

3.1.1 Display

To turn the unit On, press the On/Off (I/O) key after power is applied to the XDWP.

To turn the unit Off, press the On/Off (I/O) key before power is disconnected.

Table 3 User interface keypad functions

Keypad	Function
On/Off (I/O)	Turns the unit On or Off (top far left keypad)
Menu	Enables the user to access the program menu to change setpoints, alarms, etc. (top near left)
Up Arrow Key	Raises the value of displayed parameter while in a set mode (setpoints, time, etc.) (arrow, top near right)
Escape (Esc)	Allows user to move back to a previous menu (top far right)
Alarm Silence	If an alarm is present, press this key to silence the alarm. Help text will appear if this key is pressed when no alarm is present (bottom left)
Down Arrow Key	Lowers the value of displayed parameter while in a set mode (set points, time, etc.) (arrow, bottom near right).
Enter	After setting a control value, press ENTER to store the information in the microprocessor (bottom right).

3.2 Main Menu - MENU Key

Press the MENU key to display the Main Menu. The menu selections are:

- SETPOINTS
- STATUS
- ACTIVE ALARMS
- ALARM HISTORY
- TIME
- DATE
- SETUP OPERATION
- SETPT PASSWORD
- SERVICE PASSWORD
- CALIBRATE SENSOR
- ALARM ENABLE
- ALARM TIME DELAY
- COMMON ALARM ENABLE
- CUSTOM ALARMS
- CUSTOM TEXT
- DIAGNOSTICS
- END OF MENU

3.2.1 Viewing or Changing Settings

To access a menu option:

1. Use the up or down arrow key to scroll to the menu option.
2. Press the ENTER key to view the current setting.
3. To change the setting, use the up or down arrow key.
4. Press ENTER to save the change.

3.2.2 SETPOINTS

Selecting SETPOINTS from the Main Menu will display the following menu items:

- MIN TEMP SP
- HI FLD TEMP

Scroll through this submenu by using the up or down arrow key. Press ENTER to select a particular function. To change a particular value, press ENTER, then use the up and down arrow keys to change the value. When the value has been changed press ENTER to store the value.

For example, to change the MIN TEMP SP:

- a. From the main status display, press MENU.
- b. Scroll to the SETPOINTS using the up or down arrow key.
- c. Press ENTER to select the SETPOINTS submenu.
- d. Scroll to MIN TEMP SP using the up or down arrow key.
- e. Press ENTER.
- f. Use the up arrow key to increase the value or the down arrow key to lower the value.
- g. Press ENTER to store.

Table 4 shows the default values and allowable ranges for these setpoints.

Table 4 Setpoint functions, default values and allowable ranges

Menu Item	Function	Default	Range
MIN TEMP SP	Minimum Room Temperature Setpoint	60°F (16°C)	40 to 80°F (4 to 27°C)
HI FLD TEMP	High Fluid Temperature Setpoint	80°F (27°C)	30 - 95°F (-1 to 35°C)

3.2.3 STATUS

The user can check the status of the control valve, from 0-100% open, the operating status of the two (2) pumps, and the fluid temperature.

3.2.4 ACTIVE ALARMS

This submenu allows the user to review what alarms, if any, are present. The screen will read either “No Alarms Present,” or “Alarm XX of YY,” followed by the alarm text. If more than one alarm is present, use the up and down arrow keys to scroll through the alarms. “XX” is the reference number of the alarm shown, “YY” is the total number of alarms.



NOTE

Setpoints, system setup parameters and alarm history are kept in non-volatile memory.

3.2.5 ALARM HISTORY

This submenu allows the user to review what alarms, if any, have occurred. The screen will read either “No Alarms” or “Alarm XX” followed by the alarm text on the first line, and the date and time of the alarm on the second line. If more than one alarm has occurred, use the up and down arrow keys to scroll through the alarms. “XX” is the reference number of the alarm shown.

3.2.6 TIME

To change the time, press ENTER to select the function, then use the up or down arrow key to change the first character, press ENTER to store, then press the up or down arrow key to change the second character, press ENTER to store, etc.



NOTE

The clock uses the 24-hour system (for example, 17:00 would be 5:00 PM). The date and time are kept current even when the control board is not powered.

3.2.7 DATE

To change the date, press ENTER, then use the up or down arrow key to change the first character, press ENTER to store, press the up or down arrow key to change the second character, etc.

3.2.8 SETUP OPERATION

Selecting Setpoint/Setup from the Main Menu will display the following selections:

- RESTART TD
- C/F DEGREES (Celsius or Fahrenheit)
- PUMP START TD
- PUMP WAIT TD
- PUMP OFF TD
- LEAD PUMP
- DIPSWCH (DIP switch)

Use the up or down arrow key to scroll through the submenu, press ENTER to select a function. **Table 5** shows the default values and allowable ranges for the Setup functions.

Table 5 Setup functions, default values and allowable ranges

Menu Item	Function	Default	Range
RESTART	Restart Time Delay	0.1 min	0 to 9.9 min (0 = NO! = manual restart)
C/F DEGREES	Celsius or Fahrenheit	F	C or F
PUMP START TD	Pump Start Time Delay	10 sec	3 - 120 sec
PUMP WAIT TD	Pump Wait Time Delay	10 sec	3 - 120 sec
PUMP OFF TD	Pump Off Time Delay	5 sec	5 - 120 sec
LEAD PUMP	Lead Pump	Pump 1	Pump 1 / Pump 2
DIPSWCH	DIP switch status	NA	NA

RESTART TD (Time Delay)

This function specifies the time for the unit to restart after main power is restored to the unit. If several systems are operating, the time delays should be set to different values to cause a sequential start. Delay can be set from 0.1 minutes (6 seconds) to 9.9 minutes. Setting the value to “NO!” will prevent the unit from restarting when power is restored. In this case, the unit must be restarted manually by pressing the “On/Off” key.

C/F DEGREES (Celsius or Fahrenheit)

The control can be selected to show readings and setpoints in either degrees Celsius (C) or degrees Fahrenheit (F). To change the value use ENTER to select this function, then use the up or down arrow key to change the value. Press ENTER to store the value.

PUMP START TD

The user may set a pump start time delay (in seconds) to ensure that fluid begins flowing when the pump starts. If fluid does not begin flowing before this delay expires, the pump will stop for a period that the user may also specify (see **PUMP OFF TD**). After this delay, the pump will again begin its startup sequence.

To make changes or review the current setting, see **3.2.1 - Viewing or Changing Settings**.

PUMP WAIT TD

The user may set the pump wait time delay to prevent the pump from continuing to run when fluid is not flowing. When the control detects a loss of fluid flow, the pump continues operating for the period specified in the PUMPWAIT TD.

If fluid flow resumes during the specified interval, the pump will continue operating. If the wait time expires and fluid flow has not resumed, the pump will shut down, activate an alarm for loss of flow to the pump and the second pump will be started.

To make changes or review the current setting, see **3.2.1 - Viewing or Changing Settings**.

PUMP OFF TD

The user can set the amount of time a pump will remain off when fluid flow is interrupted or stops. After the time delay has expired, the control will try to start a pump—unless there is a problem with the building chilled water system or if the fluid temperature sensor has failed.

To make changes or review the current setting, see **3.2.1 - Viewing or Changing Settings**.

LEAD PUMP

The user can select which pump is the lead pump, either pump #1 or pump #2. For example, if pump #1 is selected, it will be the primary pump and will switch to the standby pump (the pump that is not selected) on a loss of water flow after a programmed time delay has elapsed.

To make changes or review the current setting, see **3.2.1 - Viewing or Changing Settings**.

DIPSWCH (DIP Switch)

This menu function displays the status of the eight-position DIP switch on the XDWP control board. The numeral “1” indicates the switch is On, “0” indicates the switch is Off. **For proper XDWP operation, DIP switches 1-8 MUST be Off.**

Table 6 XDWP DIP switches and factory settings

DIP Switch	Factory Setting
1	Off
2	Off
3	Off
4	Off
5	Off
6	Off
7	Off
8	On = XDP; Off = XDWP

3.2.9 Password Security—SETPT PASSWORD and SERVICE PASSWORD

Setpoints, setup operations and alarm settings may be secured with three-digit passwords to prevent unauthorized changes. The password function for SETPT PASSWORD and for SERVICE PASSWORD is enabled by default. Passwords are enabled or disabled through DIP switch #8.

- To enable the password security feature, open the user interface display cover and set DIP switch #8 to the Off position, then close the cover.
- To disable the password security feature, open the user interface display cover and set DIP switch #8 to the On position, then close the cover.

Change Password—SETPT PASSWORD

The factory default SETPT PASSWORD is “123”—this password protects setpoints and some alarm settings. To change the SETPT PASSWORD:

1. Press the MENU key to display the Main Menu.
2. Use the up or down arrow keys to scroll to the SETPT PASSWORD function.
3. Press ENTER to access the SETPT PASSWORD function. The LCD will display three zeros (000).
4. Enter the present, three-digit password.
 - a. Use the up or down arrow key to enter the first number.
 - b. Press the ENTER button to select the second number in the password.
 - c. Use the up or down arrow key to enter the second number.
 - d. Enter the third number by repeating **Steps b** and **c**.
 - e. Press the ENTER button to accept the password. The LCD will display the message PASSWORD OK.
5. Press the ENTER button; the LCD displays the message ENTER NEW PSW and the current password. The first numeral will be selected.
6. Use the up or down arrow key to enter the first number of the new password. Press the Enter button to select the second numeral in the password.
7. Use the up or down arrow key to enter the second number of the new password. Press the Enter button to select the third numeral in the password.
8. Use the up or down arrow key to enter the third number of the new password. Press the Enter button to save the new password.

Change Password—SERVICE PASSWORD

The factory default SERVICE PASSWORD is “123”—this password protects setup operations and more-critical alarm settings. To change the SERVICE PASSWORD:

1. Press the MENU key to display the Main Menu.
2. Use the up or down arrow keys to scroll to the SERVICE PASSWORD function.
3. Press ENTER to access the SERVICE PASSWORD function. The LCD will display three zeros (000).
4. Enter the present, three-digit password.
 - a. Use the up or down arrow key to enter the first number.
 - b. Press the ENTER button to select the second number in the password.
 - c. Use the up or down arrow key to enter the second number.
 - d. Enter the third number by repeating **Steps b** and **c**.
 - e. Press the ENTER button to accept the password. The LCD will display the message PASSWORD OK.
5. Press the ENTER button; the LCD displays the message ENTER NEW PSW and the current password. The first numeral will be selected.
6. Use the up or down arrow key to enter the first number of the new password. Press the Enter button to select the second numeral in the password.
7. Use the up or down arrow key to enter the second number of the new password. Press the Enter button to select the third numeral in the password.
8. Use the up or down arrow key to enter the third number of the new password. Press the Enter button to save the new password.

3.2.10 CALIBRATE SENSOR

The temperature and humidity sensor can be calibrated by selecting this menu item. The temperature sensor can be calibrated $\pm 5^{\circ}\text{F}$, and the humidity sensor can be calibrated $\pm 10\%$ RH. To prevent coil condensation, the sensors must be calibrated to a known source.

3.2.11 ALARM ENABLE

Alarms may be disabled or enabled as part of the user's customized setup. An alarm that has been disabled will not report to the wall box beeper nor to the common alarm relay. Alarms are enabled by default.

Use the up or down arrow key to select a particular alarm; "EN" enables the alarm, "DIS" disables the alarm. Press ENTER to save the change.

3.2.12 ALARM TIME DELAY

Some alarms may be programmed with a time delay from 0 to 255 seconds as a means of preventing nuisance alarms. This function specifies the amount of time an alarm must be present before the XDWP recognizes and annunciates the alarm. If the alarm condition goes away before the time delay has expired, the alarm will not be recognized, and the time delay timer will be reset.

Valve Failure and Loss of Power alarms do not have a programmable time delay.

3.2.13 COMMON ALARM ENABLE

Each individual alarm can be selected to energize or not to energize the common alarm relay. If the energize common alarm function is set to YES, the relay is energized immediately as the alarm is annunciates and de-energized when the alarm condition goes away (only after the alarm has been recognized). If the alarm is completely DISABLED (see 3.2.11 - ALARM ENABLE), the alarm has no effect on the common alarm relay.

Use the up and down arrow keys to scroll to a particular alarm, press the ENTER key to select it, then press ENTER to change the state (Yes or No).

3.2.14 CUSTOM ALARMS

This is the menu where the user selects the alarm message that will be displayed when there is an input to the customer alarm input on the control board. This menu has four choices: one user-defined custom message (see 3.2.15 - CUSTOM TEXT for details) and three preprogrammed messages:

- SMOKE DETECTED
- CUSTOM 1 (a user may enter a custom text message that will replace the text "CUSTOM 1")
- WATER FLOW LOSS
- STANDBY UNIT ON

1. Press the ENTER key to access the menu.
2. Use the up or down arrow key to view the messages.
3. Press the ENTER key to select the message to be displayed.

3.2.15 CUSTOM TEXT

This menu permits the user to set up a custom text message with a maximum length of 16 characters. The message may use any of the following characters or a blank space:

ABCDEFGHIJKLMNOPQRSTUVWXYZ#%*-0123456789.

This custom text can be designated as the custom alarm text in the "CUSTOM ALARMS" menu (see 3.2.14 - CUSTOM ALARMS). To define the message:

1. Press the ENTER key to access the menu.
2. Use the up or down arrow key to change the character with the pointer below it.
3. Press the ENTER key to go to the next character.
4. Repeat the steps for all characters in the message (maximum of 16 characters).
5. Press the ENTER key to accept new custom text.

3.2.16 DIAGNOSTICS

This allows the user to perform checks on inputs, outputs, and conduct a test of the XDWP control board from the wall box.

Entering the “TEST OUTPUTS” will interrupt system operation. Selecting “TEST INPUTS” or “TEST MICRO” will not interrupt system operation. Pressing ENTER and selecting “TEST OUTPUTS” will permit the user to toggle the following outputs on and off:

PUMP 1—On/Off

PUMP 2—On/Off

CTR VALVE XX.Xma—OPEN/CLOSE (control valve and 4-20mA feedback signal)

GREEN LAMP—On/Off

RED LAMP—On/Off

COMMON ALARM—On/Off

Pressing ENTER and selecting “TEST INPUTS” will permit the user to read the following inputs:

- INPUT POWER
- LEAK DETECT
- CONDENSATION
- FLOW SWITCH
- PRESSURE SWITCH
- FAN FAILURE
- CUSTOM ALARM

Pressing ENTER and selecting “TEST MICRO” will permit the user to test the microcontroller and associated circuitry on the XDWP control board.

4.0 ALARM DESCRIPTIONS AND SOLUTIONS

4.1 Alarm Descriptions



NOTE

*Alarms **must be acknowledged** before they can be reset. To acknowledge or silence an alarm, press the ALARM SILENCE / ? key.*

- **LOSS OF FLOW P1**—Activated when Pump 1 is commanded to run and the flow switch does not sense flow (set at 10 gpm [38 lpm] minimum). After attempting to start Pump 1 for 120 seconds (including time delays), the XDWP will automatically switch to the other pump to establish flow.
- **LOSS OF FLOW P2**—Activated when Pump 2 is commanded to run and the flow switch does not sense flow (set at 10 gpm [38 lpm] minimum). After attempting to start Pump 2 for 120 seconds (including time delays), the XDWP will automatically switch to the other pump to establish flow.
- **VALVE FAILURE**—Activated when the chilled water control valve has been commanded by the control to open or close and no change is detected from the valve-position signal. The control will close the valve and then try to control the control valve based on its travel time. Main power (disconnect switch) must be turned Off, then back On to clear this alarm.
- **CUSTOMER ALARM**—Activated when 24VAC signal is applied to the customer alarm input on the control board. Alarm will reset when the 24VAC signal is taken away.
- **FAILED CW SENSOR**—Activated when the control stops receiving a signal from the entering chilled water temperature sensor. The alarm will reset itself when the temperature sensor signal is re-established.
- **REMOTE SENS PROB**—Activated when no signal is present from the remote temperature or humidity sensors. Alarm will reset when the temperature and humidity signals are re-established.
- **LOCAL SENS PROB**—Activated when no signal is present from the local temperature or humidity sensors or when communication with the display is lost. The alarm will reset when the temperature and humidity signals are re-established.
- **LOSS OF POWER**—Activated when the unit is On and operational and 24VAC power to the control is lost. This alarm will be emitted when power is restored to the control. The XDWP will restart at a user-defined time delay after power is restored. The alarm will reset itself after 30 seconds of run time.

4.2 Red and Green Lamp Indicators

- The Green lamp will be on only when The XDWP is On and running with no alarms.
- The Red lamp will be on if the unit is On and running with an active alarm, or if the unit is shut down because of a certain alarm.
- The Red lamp will flash when an alarm is being annunciated. The Red lamp will stop flashing and the beeper in the display will stop beeping when the ALARM SILENCE / ? key is pressed.

4.3 Alter Alarm Settings

4.3.1 Enable or Disable Alarms

At the user's discretion, some alarms may be enabled or disabled. If an alarm is disabled, the alarm condition will not be monitored and will not trip, will not be in ACTIVE ALARMS, will not be in ALARM HISTORY and will not be annunciated.

These alarms may be enabled or disabled:

- LOSS OF FLOW P1—loss of coolant flow with Pump 1 alarm
- LOSS OF FLOW P2—loss of coolant flow with Pump 2 alarm
- VALVE FAILURE—chilled water control valve failure alarm
- CUSTOMER—customer alarm

To determine whether an alarm is enabled or disabled:

1. Press the MENU key.
2. Use the up and down arrow keys to move to the ALARM ENABLE menu.
3. Press the ENTER key to access the menu. Use the up and down arrow keys to move through the menu and view which alarms are enabled or disabled. ("ON" means that the alarm is enabled, "OFF" means that the alarm is disabled.)

To change an alarm from enabled to disabled, or vice versa

1. Determine whether the alarm is enabled or disabled (see above).
2. Use the up and down arrow keys to scroll to the alarm to be changed.
3. Press the ENTER key. (The control will ask for a service password if passwords are enabled. Use the up and down arrow keys and ENTER key to enter the three-digit password.)
4. Press the ENTER key again to change the alarm.
5. Press the ESC key two to three times to return to the main display.

4.3.2 Increase or Decrease Alarm Time Delays

An alarm time delay is the time that the a condition must exist before the control activates an alarm for that condition. This can be used as a filter to prevent nuisance alarms from transient events.

The following alarm may have its time delays changed:

- CUSTOMER—customer alarm

To view the time delay for an alarm:

1. Press the MENU key.
2. Use the up and down arrow keys to move to the ALARM TIME DELAY menu. Press the ENTER key to enter into the menu. Use the up and down arrow keys to move through the menu and view the alarm time delays.

To change the time delay for an alarm:

1. Press the ENTER key. (The control will ask for a service password if passwords are enabled. Use the up and down arrow keys and ENTER key to enter the three-digit password when prompted.)
2. Press the ENTER key again on the alarm to select the alarm to be changed.
3. Use the up and down arrow keys to change the alarm time delay.
4. Press the ENTER key to record the change.
5. Press the ESC two to three times to return to the main display.

4.4 System Shutdown Causes

Unit Is Off By Fluid Sens Fail

The control has lost its signal from the fluid temperature sensor. The control has no way of controlling the fluid temperature, so the unit is shut off. Main power (disconnect switch) must be turned Off, then back On to clear this alarm.

Unit Is Off By Pump Short Cycle

The control was unable to get a pump started upon startup or after a loss of flow. The control looks at the SHORT CYCLE time delay. If it cannot establish flow within that amount of time the unit is shut down. This time is adjustable through the SHORT CYCLE alarm time delay. Main power (disconnect switch) must be turned Off, then back On to clear this alarm.

5.0 SPECIFICATIONS

Table 7 Liebert XDWP specifications

Model	CDU100C-A000	CDU100C-C000	CDU100C-M000
Cooling capacity, nominal	100 kW with 45°F (7°C) entering water temperature and 75 gpm (284 lpm) water flow rate. Capacity is reduced when glycol mixtures are used in place of 100% water.		
Electrical requirements			
Input	460V-3ph-60Hz	208V-3ph-60Hz	380/415V-3ph-50Hz
Full Load Amps	2.7	7.0	4.05
Dimensions, inches (mm)			
Height – Unit only	78 (1981)		
Height – As shipped	83 (2108)		
Width	38 (965)		
Depth	34 (863)		
Weight, lbs (kg)			
Unit only	750 (340)		800 (363)
Shipping weight	874 (396)		1001 (454)
Installed, with coolant and chilled water	823 (373)		873 (396)
Pipe connections			
Water fill line	5/8" OD, Cu		
Supply line to XDWR	2-1/8" OD, Cu		
Return line from XDWR	2-1/8" OD, Cu		
Chilled water supply and return	2-1/8" OD, Cu		
Control valve	2-way, 2" nominal		
Pressure drop – chilled water side	7 psi (48kPa; 0.5 bars), with 75 gpm (284 lpm) water flow rate, control valve fully open		
Temperature rise – chilled water side, F (C)	10° (5.5°) with rated flow		
Number of XDWR8s connected	Maximum 12, minimum 2		
Cabinet exterior finish	Black, matte finish, heat-fused powder coat		
Agency			
Approvals	CSA 60Hz	CSA 60Hz	CE 50Hz

NOTES

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