



INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

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No. 0580001087(4)

Model 8785

All-Weather Emergency Water Tempering Booth
Area Classification - Ordinary



DISCLAIMER

IMPORTANT

Read this installation manual completely to ensure proper installation, then file it with the owner or maintenance department. Compliance and conformity to drain requirements and other local codes and ordinances is the responsibility of the installer.

Separate parts from packaging and make sure all parts are accounted for before discarding any packaging material. If any parts are missing, do not begin installation until you obtain the missing parts.

Flush the water supply lines before beginning installation and after installation is complete. Test the unit for leaks and adequate water flow. Main water supply to the emergency fixture should be "ON" at all times. Provisions shall be made to prevent unauthorized shutoff. Please refer to the enclosed instructions for flushing the unit prior to use.

The ANSI Z358.1 standard requires an uninterrupted supply of potable water. Water supply must be capable of providing specified capacity (GPM) and water pressure range (PSI) at all flow rates.

The inspection and testing results of this equipment should be recorded weekly to verify proper operation. This equipment should be inspected annually to ensure compliance with ANSI Z358.1.

Installation and maintenance of this system must be completed by a qualified plumber and electrician in accordance with the information contained in this installation manual and in compliance with all national and local codes. When making electrical connections, be sure to follow all lockout-tag out safety procedures.

Any modifications to the Haws equipment or failure to use the listed spare parts will void warranty and certification.

It is recommended that all water supply and electrical connections be made at temperatures above freezing (32°F (0°C)). Failure to do so may result in product and or property damage.

**For technical support, contact:
Haws Services | (800) 766-5612 | www.hawesco.com/services**

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DESCRIPTION OF PRODUCT

Haws Corporation Model 8785 Tempered Water Booth is a foam-insulated, aluminum skinned enclosure with high visibility green chemical and UV resistant polyester-based powder coating. The interior is illuminated for ease of maintenance and inspection. Optional space heating is available equipment protection.

Hot water generated via an immersion heater is stored in the water tank. Hot and cold water are mixed with an engineered blending system to provide tepid water for the specified number of combination shower/eyewash operations. Typical flow rate of a combination shower/eyewash is 30 GPM. The ASSE 1071 certified blending system is a safe, prepackaged, fully engineered and tested system for blending large volumes of hot and cold water specifically designed for emergency showers and eyewashes. The system provides multiple levels of protection to prevent scalding, including a high temperature shutoff valve. Also included is a pressure relief cold-water bypass that allows full cold flow in the event of a hot water shut off. There are no electrical components in the blending system.

Model 8785 is available without any pumps, with a circulating pump or with a VFD controlled pump. The VFD controlled pump is ideal when supply pressure is low, or a recirculation loop is utilized to maintain water temperatures in the safety shower supply piping.

APPLICATION

Tank temperatures are set at 165°F (73.8°C) for USA and 145°F (62.8°C) for Canada.

TANK SIZE	TANK TEMPERATURE	SHOWER CAPACITY (15 Min.)	MINIMUM INLET TEMPERATURE
119G	145°F/62.8°C	1	62°F/16.7°C
	165°F/73.8°C	1	54°F/12.2°C
120G	145°F/62.8°C	1	62°F/16.7°C
	165°F/73.8°C	1	54°F/12.2°C
200G	145°F/62.8°C	1	35°F/1.6°C
	165°F/73.8°C	1	32°F/0°C
318G	145°F/62.8°C	2	50°F/10°C
	165°F/73.8°C	2	39°F/3.8°C
400G	145°F/62.8°C	2	35°F/1.6°C
	165°F/73.8°C	2	32°F/0°C

SHIPPING, HANDLING AND STORAGE

Model	Description	Dimensions W x L x H	Weight	Dimensions W x L x H (Crated)	Weight (Crated)
8785	All-Weather Emergency Water Tempering Booth	60" x 60" x 102"	< 3000 lbs.	69" x 69" x 106"	< 4000 lbs.

Recommended Equipment, Materials and Supplies to be provided by Installer:

- Concrete slab rated to support a minimum of 8,000-pound load requirement.
- (4) 3/4" minimum diameter by 1-1/2" minimum length anchor bolts with washers.
- A forklift capable of lifting 5,000 lbs. should be utilized to transport the unit from truck to site. The unit should be lifted from the rear, or equipment end, and low to the ground.
- Electrical Supply Materials (if applicable).
- Plumbing Supply Materials (if applicable).
- Freeze protection equipment for the water supply leading up to the enclosure (if applicable).

Storage

The unit should be stored in a clean, dry place until ready for installation unless otherwise specified.

INSTALLATION PROCEDURE

WARNING: DO NOT connect power before supply plumbing. Connections should be performed by a certified electrician and plumber only.

- a. Remove unit from crate.
- b. The unit should be secured on a level site, using the supplied brackets and suitable anchoring devices. Suggested anchoring devices are 3/4" minimum diameter by 1-1/2" minimum length anchor bolts with washers.
- c. The slab where the unit is installed should be made to allow the water to drain out the sides and away from the booth. The unit contains hundreds of gallons of water, which can cause significant property damage and a potential hazard if not drained properly.

WARNING: Failure to allow water to drain may result in premature failure of booth, voiding of product warranty, and property damage. (See System Drain and Check Procedure).

- d. The connection provided for the water supply is a 1-1/2" NPT union. Water supply lines are required to be capable of supplying 30GPM per shower/eyewash that can be run simultaneously. Supply pressure at shower/eyewash to remain between 30PSI minimum and 90PSI maximum while active. The water supply line should run for a few minutes prior to connection to eliminate any debris before it enters the equipment.
- e. Connect electrical supply to the Power Disconnect Switch (see Figure 1).

NOTICE: All Power Connections must be made according to local codes and standards using components which are compliant with the area the unit is being installed in.



Figure 1. Disconnect Switch Junction Box

CAUTION: Do not apply power to the unit until all water connections are made and the tank and piping are full of water.

- f. Once all water and power connections are made, open the supply water inlet valve and fill the system. While water is flowing into the system, open the emergency shower to facilitate air removal from the system. After water flows freely from the shower for several minutes, turn the shower off. Inspect plumbing for leaks and repair as necessary. During transit, some plumbing may have become loose, allowing water to leak from the threads.
- g. The expansion tank should be charged with compressed air to a pressure equal to the water supply pressure or pump discharge pressure when using a pump. An air fitting (Schrader valve) is accessible on the top of the expansion tank, under the plastic cap (see Figure 2).



Figure 2. Top of Expansion Tank

CAUTION: Before turning on the power, close all electrical boxes.

- h. At this point the power can be turned on. The tank water must be allowed to heat up before the blending system will function properly. Heating can take up to 12 hours, depending on supply water temperature and the size of immersion heater and tank.

NOTE: An emergency shower or eyewash (see Figure 3) should be utilized for testing of the blending system. Refer to the Maintenance, Testing, and Repair section of the TWBS.HF Blending System Manual document for proper adjustment and operation.



Figure 3. Eyewash

- i. The optional internal space heater has an adjustable thermostat, which is factory set at 70°F (21°C).

WARNING: System is not freeze protected without an energized electrical connection. It is recommended that installation be completed when ambient temperature is above freezing.

ADDITIONAL INSTRUCTIONS FOR UNITS WITH VFD CONTROLLED PUMP

WARNING: Proper analysis of the system should be completed before installing and operating the VFD controlled pump system. Improper application could over pressurize the system, damage equipment, or injure personnel.

- j. The VFD is factory set to for most applications, but some adjustment may be required. The pressure setpoint is 30psi if this requires adjustment to account for showers at higher elevations than the tempering equipment change the setpoint to 30psi + the shower elevation gain. 1FT = .433psi.
- k. The pump minimum frequency is set to 25HZ via parameter P102. If Recirculation is not required set to 0HZ. If recirculation flowrate is not sufficient to maintain water temperature in piping at the desired temperature increase the frequency until the desired temperature is maintained.

- I. Units containing a Back-Pressure Regulator Valve need the setpoint verified by testing the highest shower in the system and confirming that there is a minimum of 30psi at that shower. The setpoint of the valve is 30psi + the shower elevation gain. 1FT = .433psi.

Checklist for start-up

CHECKLIST	Complete OK	Inspector Initials
Pre-connection Check		
Check all components for any connections or connectors that may have loosened during shipping.		
System Flush (All Electrical Power off for System Flush)		
Verify that an adequate dynamic pressure is available to supply a minimum of 30 PSIG at each shower location.		
Verify that inlet pressure does not exceed 90 PSIG.		
System water supply is connected, and all water supply valves opened.		
Water is clear and free of any contamination, particles, or discoloration.		
Connections		
System is charged with water and all air is evacuated from the system.		
Expansion tank Schrader valve is charged with air equal to water static inlet pressure or pump discharge pressure when installed.		
Connect remote monitoring via plant control system (if applicable).		
Applying Power to the System		
Verify that proper voltage is present.		
Verify that equipment ground is properly connected.		
Apply power to the system.		
Verify that the space heater thermostat is set to 70° F (21°C). Increase the thermostat set point and verify that the heater is producing heat. Return the thermostat to 70°F (21°C).		
The tank heater set point is preset. It may take up to 12 hours for the tank to reach the operating temperature.		
Blending Valve		
When shower is activated read the center temperature gauge directly above the blending valve to ensure to the readout is 85°F (29°C) ± 5°.		
Setpoint Adjustment		
VFD pressure setpoint is set to 30psi + Elevation gain of highest shower.		
Minimum pump speed, Parameter P102 is 0HZ for non-recirculating systems or sufficient to keep water temperature in loop at desired temperature, 60°F (15.5°C) minimum is standard.		
Back-Pressure Regulator Valve pressure setpoint is set to 30psi + Elevation gain of highest shower.		

PREVENTIVE MAINTENANCE

Note: These are general instructions applicable to all Haws Model 8785 Tempered Water Booths.

Additional maintenance activities may apply to particular configurations/options supplied.

Weekly

- Verify the tank temperature reads $165^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ($74^{\circ}\text{C} \pm 1^{\circ}\text{C}$) and $145^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ($63^{\circ}\text{C} \pm 1^{\circ}\text{C}$) for Canada (see Figure 5).
- Verify space heater is functioning by raising space heater thermostat to a set point above the ambient temperature. The thermostat is in the space heater junction box. After several minutes, the space heater should begin to emit heat. Return space heater thermostat to 70°F (21°C).
- Verify temperature gauge on center pipe of blending valve (see Figure 4) reads $84^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($29^{\circ}\text{C} \pm 2^{\circ}\text{C}$) flowing.



Figure 4. Blending Valve

Monthly

- Verify correct operation of blending valve. See Maintenance, Testing, and Repair section.

Quarterly

- Flush Y – strainers

Annually

- Check tank heater and tank for deposit buildup. Drain tank and clean/replace if necessary.
- Check condition of tank anode(s). Replace if necessary.
- Drain tank and verify level switch operation (see Figure 5).



Figure 5. Level Switch

- All emergency showers and eye/face washes shall be inspected annually to assure conformance of ANSI Z358.1. This includes, but not limited to, proper installation, accessible locations, proper flow rate and temperature of flushing fluid. Please refer to the most current standards document for more information.

NOTE: If the blending valve temperature reading is incorrect, adjust the blending valve by turning the socket head cap screw located on the bottom of the center section of the valve body. Turning the screw clockwise will lower the outlet temperature, counterclockwise will raise the outlet temperature. Maximum outlet temperature is approximately 85°F (29.4°C). Outlet temperature will be measured most accurately by the temperature gauge when water is flowing through the valve.



Figure 6. Blending Valve

SYSTEM DRAIN AND CHECK PROCEDURE:

WARNING! System contains HOT water! Failure to DISCONNECT POWER AND ALLOW WATER IN HOT WATER TANK TO COOL sufficiently prior to draining may cause SEVERE INJURY OR DEATH! Always follow safe Lock Out – Tag Out procedures.

1. Turn off power at system disconnect switch. Lock Out and Tag Out according to your company's procedures.
2. Allow system hot water tank to cool below 100°F (37.8°C). Cooling could take many hours depending on the ambient temperature. This process can be sped up by opening the shower and allowing the blending valve to consume the hot water from the tank in the blending process. While the shower is running, monitor the blending valve hot water inlet mechanical temperature gauge. When the blending valve hot water inlet temperature gauge drops below 100°F WHILE FLOWING, the tank temperature will be low enough to facilitate safe system draining.
 - a. If you will be running a shower to drop the tank temperature, this may be an appropriate opportunity to also perform an annual test of the shower for ANSI Z358.1 compliance for flow and pattern. If so, be aware that full 15-minute duration of tepid water may be modestly shortened because the tank heater would not be operating.
3. When the hot water tank has cooled sufficiently, shut off the shower if it has been activated, and turn off the main inlet water supply ball valve located inside the booth on the water supply line. This is a lockable ball valve, and Haws recommends locking this valve in the off position any time the system is to be drained.
4. If necessary, connect a drain hose to the drain elbow outside the booth and route to a safe drain location. Do not open drain valve until step 8.
5. Confirm that the power is disconnected.
6. Unscrew and remove the cover on the Level Switch.
7. Using a multimeter, check continuity across the wired terminal block between the pin labeled "C" and the pin labeled "NC". If the tank is full, as it should be at this point, the multimeter should indicate electrical continuity exists between these two pins. (Note this Double Pole, Double Throw switch has two identical terminal blocks and testing should be done on the one that is wired.) If the tank has been heating properly, this test should be positive. If not, check the connections and confirm the tank is full.

8. Open the system drain valve inside the booth near the drain outlet elbow in the back wall to drain the system. To speed up draining, allow additional air into the tank by opening the ball valve on the y-strainer in the hot water line and between the top of the tank and the hot side of the blending valve. Continue until water stops draining.
9. Using a multimeter, check continuity across the wired terminal block between the pin labeled "C" and the pin labeled "NC". If the tank is empty (or below the level of the switch), as it should be at this point, the multimeter should indicate NO electrical continuity exists between these two pins. (Note this Double Pole, Double Throw switch has two identical terminal blocks and testing should be done on the one that is wired.) If the multimeter indicates continuity DOES exist when the tank is empty, the float may be stuck in the up position, which would require removal and cleaning and/or replacement of the level switch.
10. Carefully remove the manway to allow internal inspection of the anode rods and immersion heater coils without removal. The tank bottom should also be inspected for excessive debris and cleaned if necessary. NEVER ATTEMPT TO ENTER THE TANK! **CAUTION: When inspecting, take care not to drop anything in the tank as the glass lining in the tank could be permanently damaged!** Remove and replace any excessively deteriorated anode rods. If inspection of the heater coils indicates excessive mineral buildup, remove the heater for cleaning or replacement. (Electrical disconnection and re-connection should be done by a qualified electrician)
Contact Haws Services for questions at 1-800-766-5612.
11. Now is also a good time to open and clean out the Y-strainers (one in the inlet water line and one in in the hot water line).
12. When maintenance is complete and any components removed have been replaced, close the system drain valve and the ball valve on the hot line Y-strainer if it was opened.
13. Unlock and open the inlet water supply valve and allow the system to fill. Opening the shower can facilitate the exit of air from the system.
14. When the system is full of water, follow appropriate Lock Out-Tag Out procedures to unlock and turn on the system disconnect switch to restore power to the unit.
15. Allow time for the system to come up to temperature (up to 12 hours) and ensure that all alarms are clear.

MAINTENANCE, TESTING, REPAIR

Booth

The booth is made of aluminum skins laminated to an insulating foam core then powder coated. Should cleaning be necessary, a mixture of water with household glass cleaner or rubbing alcohol can be used. Pressure washing is not recommended. For repairs to small holes in the booth, Sikaflex 1A Construction Sealant, silicone, or a similar sealant can be used to seal openings in the booth's surface.

WARNING: Failure to patch or fill any holes or punctures to booth may result in premature failure of booth and void the product warranty.

Blending Valve System

The TWBS.HF blending valve system should require minimal amount of maintenance. During scheduled testing, the temperature output should be checked for proper adjustment. With the shower or eye/facewash activated the outlet temperature should be approximately 80-85°F (26.7°C-29.4°C).



Figure 7. Blending Valve

NOTE: For more information, refer to the TWBS.HF Blending Valve System O&M manual.

High-Temp Dump Valve

High-Temp Dump valve is designed to open before internal water temperature exceeds 100°F (37.8°C).

Y-Strainers

Y-strainers should be blown out at the same time as scheduled testing of showers or monthly.

Tank Anodes

Check anodes annually and replace them if necessary. Reference Spare Parts List for part numbers.

(QTY 2 for 119/120/200 Ga. Tanks and QTY 3 for 318/400 Ga. Tanks)

For technical support, contact:

Haws Services | (800) 766-5612 | www.hawsco.com/services

TROUBLESHOOTING

TROUBLE	REPAIR CHECKLIST
Tank temperature too cold (165°F (74°C) standard or 145°F (63°C) for Canada):	<ul style="list-style-type: none"> a) Used recently? Full recovery could take 24 hours. b) Check thermostat setting (165°F/145°F). c) Check tank heater circuit fuses F1. d) Check control voltage and power supply fuses PFU & CFU.
Tank temperature too hot:	<ul style="list-style-type: none"> a) Check thermostat setting.
Space heater not on when temperature is below 70°F (21°C):	<ul style="list-style-type: none"> a) Check thermostat setting. b) Check heater fuses F2
Insufficient water flow to eyewash or shower:	<ul style="list-style-type: none"> a) Check water supply dynamic pressure. b) Check and clean Y- strainers. c) Check ball valves. Must be open and unclogged. d) Clogged flow control. Clean or replace flow control in either eyewash or shower. e) When VFD pump or Back-Pressure Regulator Valves are installed confirm that setpoint is 30psi + elevation gain to highest shower.

If there are any questions that cannot be answered here, please consult:

Haws Services | (800) 766-5612 | www.hawsco.com/services

SPARE PARTS

****Any modifications to the Haws equipment or failure to use the listed spare parts will void warranty and certification****

UNITS WITH NO PUMP							
COMPONENTS		VOLTAGE					
		208V 1PH	208V 3PH	240V 1PH	240V 3PH	480V 3PH	600V 3PH
FUSES	DFU	0280000470	0210001131	0280000470	0210001131	0210001131	0210001131
	F2	0280000790	0280000786	0280000790	0280000785	0280000797	0280000796
	F3	0280000790	0280000786	0280000790	0280000785	0280000797	0280000796
	PFU	0280000763	0280000763	0280000761	0280000761	0280000755	0280000755
	CFU	0280000761					
ELECTRICAL COMPONENTS	CONTACTOR (IMMERSION HEATER)	0210000088	0210000062	0210000088	0210000062	0210000062	0210000062
	CONTACTOR (SPACE HEATER)	0210000088	0210000062	0210000062	0210000062	0210000062	0210000062
	CONTROL RELAY	0210000122					
	TRANSFORMER	0210000975	0210000975	0210000975	0210000975	0210000975	0210001015
INSTRUMENTATION	FLOW SWITCH	0210000973					
	LEVEL SWITCH	0210000042					
	TEMPERATURE GAUGE	0002582321					
	PRESSURE GAUGE	0002581715					
HEATERS	IMMERSION HEATER (4kW)	0210000311	0210000312	0002982944	0210000181	0210000141	0210000182
	SPACE HEATER (3.5kW)	0510001273	0510001274	0510001275	0510001276	0510001277	0510001278
PLUMBING	CHECK VALVE (BRASS, 1-1/2")	0110000010					
	CHECK VALVE (STAINLESS, 1-1/2")	0110001392					
	EXPANSION TANK (NON-ASME)	0005782535					
	EXPANSION TANK (ASME)	0110000582					
	T&P VALVE (150PSI)	0006370021					
	AIR ELIMINATOR	0110000043					
	VACUUM BREAKER	0006219000					
TANK COMPONENTS	MIXING VALVE	TWBS.HF					
	ANODE ROD F/ 200G– 330G	0110001550					
	ANODE ROD F/ 119G & 120G	0110001545					
	CLEANOUT GASKET F/ 119G & 120G	0110001547					
	HAND HOLE GASKET F/ 200G	0110001548					
	MANHOLE GASKET F/ 318G & 330G	0110001549					

****Any modifications to the Haws equipment or failure to use the listed spare parts will void warranty and certification****

UNITS WITH RECIRCULATION PUMP							
COMPONENTS		VOLTAGE					
		208V 1PH	208V 3PH	240V 1PH	240V 3PH	480V 3PH	600V 3PH
FUSES	DFU	0210001130	0280000470	0210001130	0280000470	0210001131	0210001131
	F2	0280000470	0210000293	0280000470	0280000793	0280000786	0280000785
	F3	0280000790	0280000786	0280000790	0280000785	0280000797	0280000796
	PFU	0280000779	0280000779	0280000754	0280000754	0210001027	0280000770
	CFU	0280000754					
ELECTRICAL COMPONENTS	CONTACTOR (IMMERSION HEATER)	0210001132	0210001132	0210001132	0210001132	0210000062	0210000062
	CONTACTOR (SPACE HEATER)	0210000088	0210000062	0210000062	0210000062	0210000062	0210000062
	CONTROL RELAY	0210000122					
	TRANSFORMER	0210001011	0210001011	0210001011	0210001011	0210001011	0210001012
INSTRUMENTATION	FLOW SWITCH	0210000973					
	LEVEL SWITCH	0210000042					
	TEMPERATURE GAUGE	0002582321					
	PRESSURE GAUGE	0002581715					
HEATERS	IMMERSION HEATER (10kW)	0210000977	0210000978	0210000979	0210000980	0210000981	0210000982
	SPACE HEATER (3.5kW)	0510001273	0510001274	0510001275	0510001276	0510001277	0510001278
PLUMBING	CHECK VALVE (BRASS, 1-1/2")	0110000010					
	CHECK VALVE (STAINLESS, 1-1/2")	0110001392					
	EXPANSION TANK (NON-ASME)	0005782535					
	EXPANSION TANK (ASME)	0110000582					
	T&P VALVE (150PSI)	0006370021					
	AIR ELIMINATOR	0110000043					
	VACUUM BREAKER	0006219000					
	MIXING VALVE	TWBS.HF					
	HI-TEMP DUMP VALVE	0110000957					
RECIRCULATION PUMP	0210001136						
TANK COMPONENTS	ANODE ROD F/ 200G - 330G	0110001550					
	ANODE ROD F/ 119G & 120G	0110001545					
	CLEANOUT GASKET F/ 119G & 120G	0110001547					
	HAND HOLE GASKET F/ 200G	0110001548					
	MANHOLE GASKET F/ 318G & 330G	0110001549					

****Any modifications to the Haws equipment or failure to use the listed spare parts will void warranty and certification****

UNITS WITH VFD OPERATED BOOSTER/RECIRC PUMP							
COMPONENTS		VOLTAGE					
		208V 1PH	208V 3PH	240V 1PH	240V 3PH	480V 3PH	600V 3PH
FUSES	DFU	0210001130	0280000470	0210001130	0280000470	0210001131	0210001131
	F1	0210001113	0280000793	0210001113	0280000793	0280000788	0280000785
	F2	0280000470	0210000293	0280000470	0280000793	0280000786	0280000785
	PFU	0280000763	0280000763	0280000761	0280000761	0280000755	0280000755
	CFU	0280000761					
ELECTRICAL COMPONENTS	CONTACTOR	0210001132	0210001132	0210001132	0210001132	0210000062	0210000062
	CONTROL RELAY	0210000122					
	TRANSFORMER	0210000975	0210000975	0210000975	0210000975	0210000975	0210001015
	VFD	0210000999	0210001000	0210000999	0210001000	0210000974	0210001001
INSTRUMENTATION	FLOW SWITCH	0210000973					
	LEVEL SWITCH	0210000042					
	TEMPERATURE GAUGE	0002582321					
	PRESSURE GAUGE	0002581715					
	PRESSURE TRANSMITTER	0210001033					
HEATERS	IMMERSION HEATER (10kW)	0210000977	0210000978	0210000979	0210000980	0210000981	0210000982
	SPACE HEATER (3.5Kw)	0510001273	0510001274	0510001275	0510001276	0510001277	0510001278
PLUMBING	CHECK VALVE (BRASS, 1-1/2")	0110000010					
	CHECK VALVE (STAINLESS, 1-1/2")	0110001392					
	EXPANSION TANK (NON-ASME)	0005782535					
	EXPANSION TANK (ASME)	0110000582					
	T&P VALVE (150PSI)	0006370021					
	AIR ELIMINATOR	0110000043					
	VACUUM BREAKER	0006219000					
	MIXING VALVE	TWBS.HF					
	SOLENOID VALVE (BRASS)	0006599545					
	SOLENOID VALVE (STAINLESS)	0110001403					
	HI-TEMP DUMP VALVE	0110000957					
	BACK PRESSURE REGULATOR	0110001018					
PUMP (5HP)	0110001019	0110001019	0110001019	0110001019	0110001019	0210001006	
TANK COMPONENTS	ANODE ROD F/ 200G – 330G	0110001550					
	ANODE ROD F/ 119G & 120G	0110001545					
	CLEANOUT GASKET F/ 119G & 120G	0110001547					
	HAND HOLE GASKET F/ 200G	0110001548					
	MANHOLE GASKET F/ 318G & 330G	0110001549					

8785 PART NUMBER BREAKDOWN

PART NUMBER CONFIGURATION AND DRAWING REFERENCE GUIDELINE.

STEP 1:

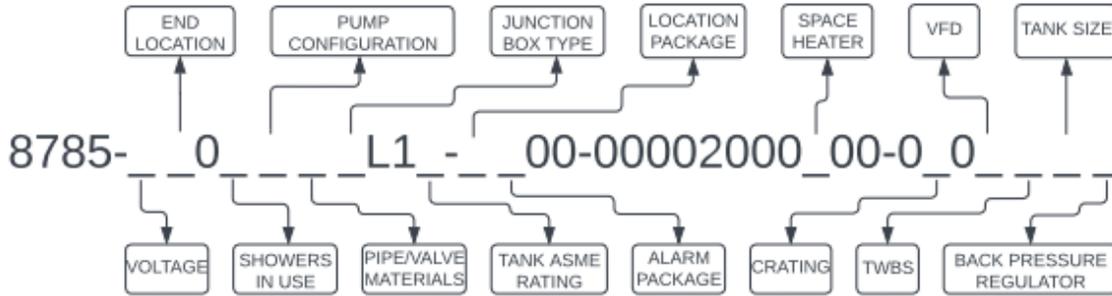
CONFIGURE PART NUMBER OR RETRIEVE PART NUMBER FROM EQUIPMENT. EXAMPLE PN: 8785-5U0D3B0L1T-2000-00002000100-0001141

STEP 2:

DETERMINE THE DRAWING SET THAT APPLIES TO THE CONFIGURED PART NUMBER. UNITS WITH NO PUMP OR JUST A RECIRCULATION PUMP USE DRAWINGS 0580001087.D-EL, 0580001087.D-PID AND 0580001087.D-GA. UNITS WITH A BOOSTER/RECIRCULATION PUMP AND A VFD USE DRAWINGS 0580001087.D-VFD EL, 0580001087.D-VFD PID AND 0580001087.D-VFD GA.

STEP 3:

USE THE TABLES BELOW TO DETERMINE WHICH SECTIONS OF THE DRAWINGS APPLY.



VOLTAGE	PN	DRAWING REFERENCE
208V 1PH 60HZ	1	P1-1
208V 3PH 60HZ	2	P1-2
240V 1PH 60HZ	3	P1-3
240V 3PH 60HZ	4	P1-4
480V 3PH 60HZ	5	P1-5
600V 3PH 60HZ	6	P1-6

END LOCATION	PN	DRAWING REFERENCE
UNITED STATES	U	P2-U
CANADA	S	P2-S

SHOWERS IN USE	PN	DRAWING REFERENCE
ONE (30GPM)	S	P4-S
TWO (60GPM)	D	P4-D

PUMP CONFIGURATION	PN	DRAWING REFERENCE
NO PUMP	0	0580001087.D-EL, P5-0 0580001087.D-PID, P5-0 0580001087.D-GA, P5-0
RECIRCULATION PUMP	1	0580001087.D-EL, P5-1 0580001087.D-PID, P5-1 0580001087.D-GA, P5-1
BOOSTER/RECIRC. PUMP (VFD INCLUDED)	3	0580001087.D-VFD EL, P5-3 0580001087.D-VFD PID, P5-3 0580001087.D-VFD GA, P5-3

PIPE AND VALVE MATERIALS	PN	DRAWING REFERENCE
GALVANIZED PIPE WITH BRASS VALVES AND STRAINERS	G	P6-G
304 SST PIPE WITH BRASS VALVES AND STRAINERS	B	P6-B
304 SST PIPE WITH STAINLESS STEEL VALVES AND STRAINERS	S	P6-S

JUNCTION BOX TYPE	PN	DRAWING REFERENCE
TYPE 4	0	P7-0
TYPE 4X	1	P7-1

TANK ASME RATING	PN	DRAWING REFERENCE
NON-ASME EXPANSION TANK	T	P10-T
ASME TANKS	A	P10-A
ASME EXPANSION TANK ONLY	E	P10-E

LOCATION PACKAGE	PN	DRAWING REFERENCE
ABOVE FREEZING (32°F - 104°F)	0	P11-0
ARCTIC (-50°F - 104°F)	2	P11-2

IN-USE ALARM PACKAGE	PN	DRAWING REFERENCE
NONE	0	-
FLOW SWITCH WITH ISOLATED ALARM DRY CONTACTS	3	P12-3

SPACE HEATER	PN	DRAWING REFERENCE
NONE (ABOVE FREEZING)	0	P23-0
SINGLE (ARCTIC)	1	P23-1

CRATING	PN
STANDARD	0
PREMIUM	1

VFD	PN	DRAWING REFERENCE
NONE	0	0580001087.D-EL 0580001087.D-PID 0580001087.D-GA
INCLUDED (BOOSTER/RECIRC. PUMP ONLY)	1	0580001087.D-VFD EL 0580001087.D-VFD PID 0580001087.D-VFD GA

TWBS	PN	DRAWING REFERENCE
ONE	0	P30-1
TWO	1	P30-2

TANK SIZE (GAL)	PN	DRAWING REFERENCE
119	0	P31-0
120	1	P31-1
200	2	P31-2
318 (VFD, 150PSI)	4	P31-4

BACKPRESSURE REGULATOR	PN	DRAWING REFERENCE
NONE	0	-
INCLUDED	1	P32-1

DRAWINGS

General Arrangement Drawings (0580001087.D-GA, 0580001087.D VFD-GA)

NOTES:

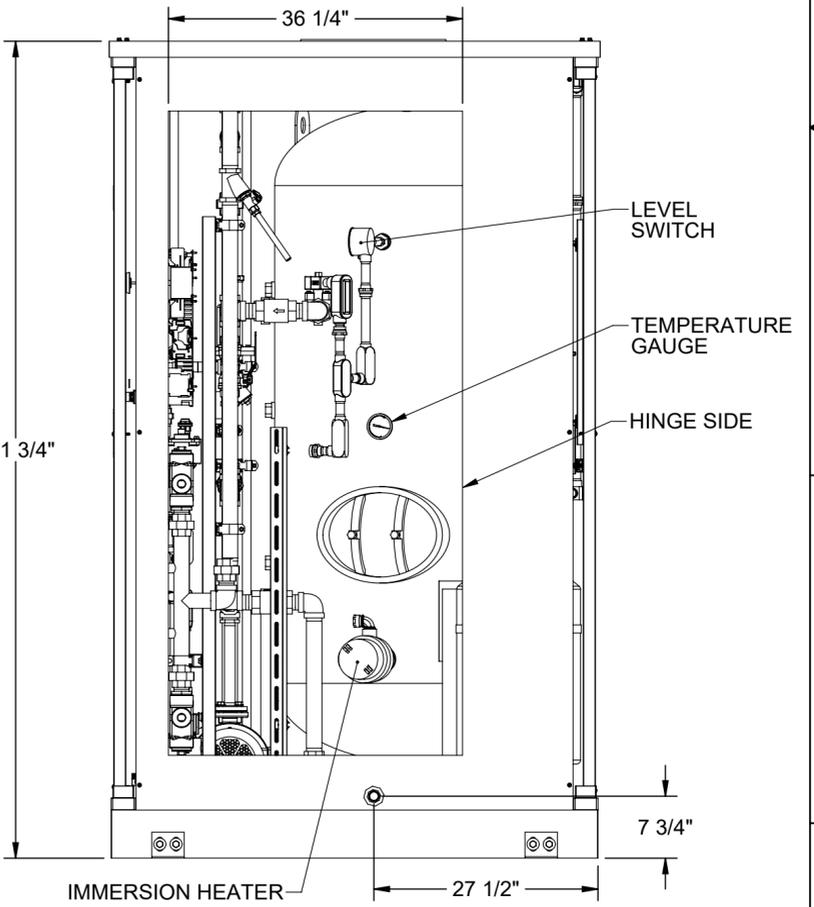
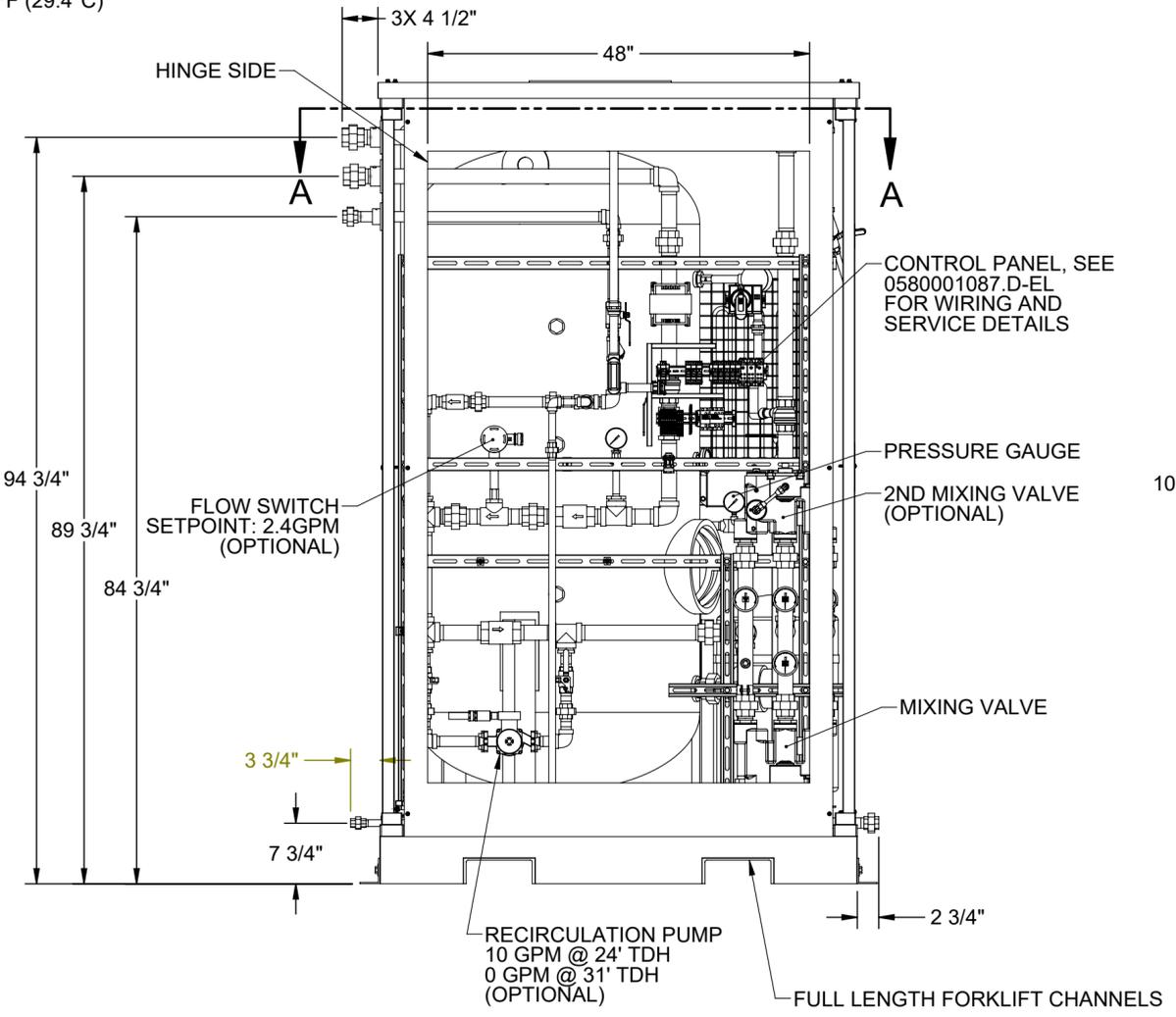
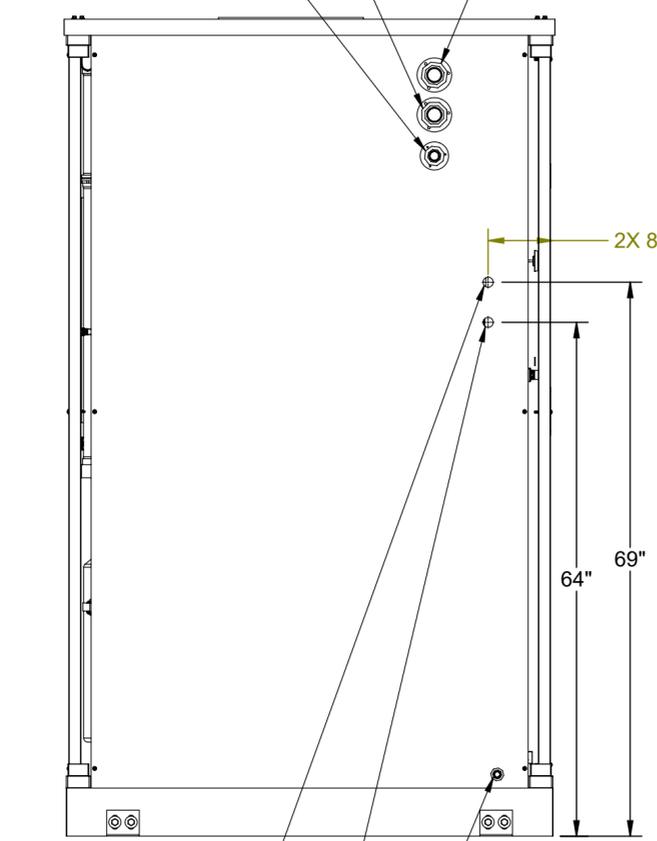
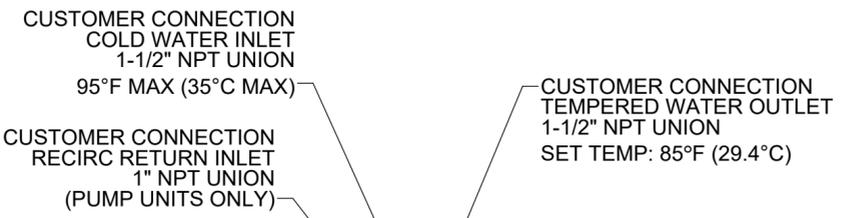
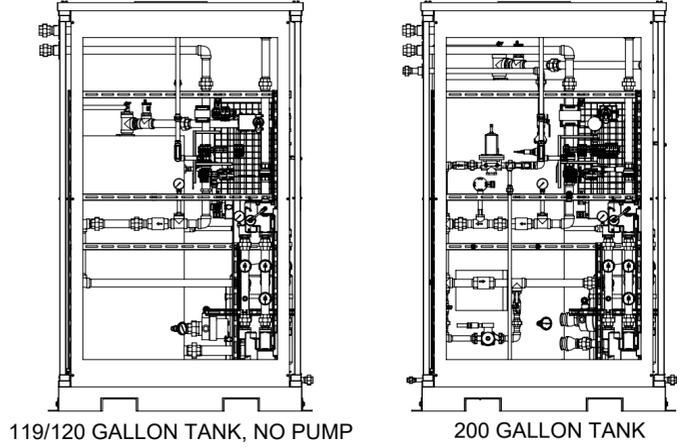
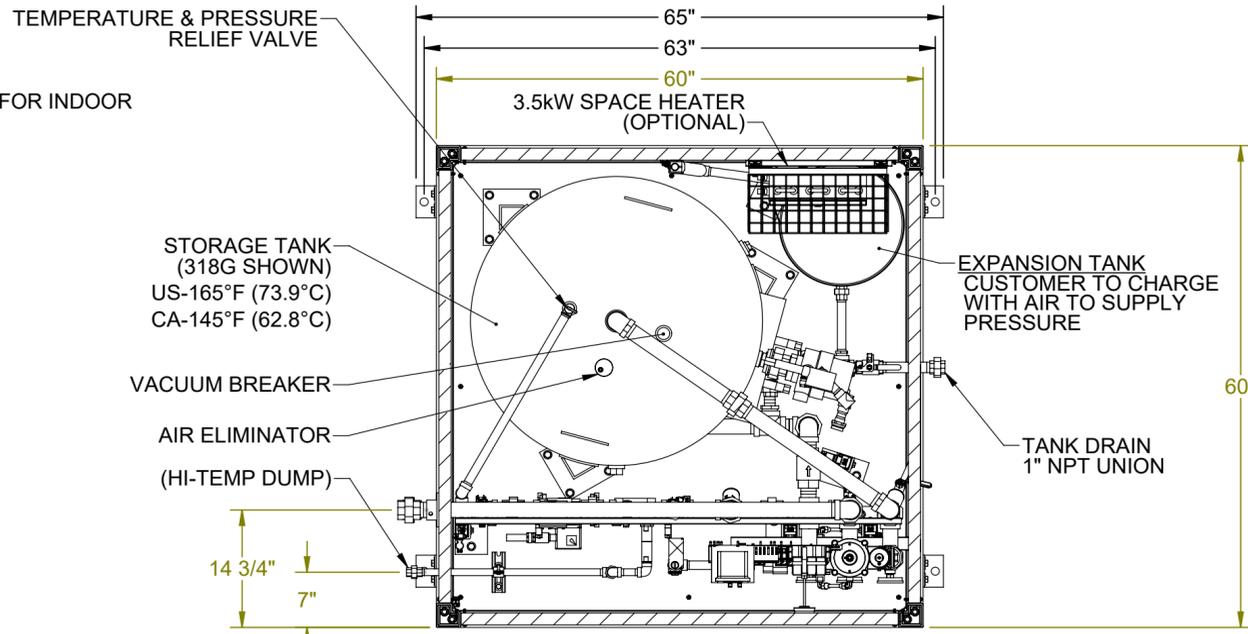
1. DIMENSIONS IN INCHES.
2. ALL TOLERANCES: $\pm 1/2"$
3. ESTIMATED WEIGHT:
 DRY: 1300 LB
 WET: 4000 LB
4. AREA CLASSIFICATION: ORDINARY
5. AVAILABLE AMBIENT TEMPERATURE RANGES:
 -50°F - 104°F (-45.6°C - 40°C), 32°F - 104°F (0°C - 40°C)
6. RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION
7. NOT ALL FEATURES ARE STANDARD

MODELS WITH RECIRCULATION PUMP OR NO PUMP

REVISEMENTS			
REV	DESCRIPTION	ECN	DATE BY
4	PER ECO	5963	11/22/2023 DW

TANK SIZE				
(TANK TEMPERATURES ARE SET AT 165°F (73.9°C) FOR USA AND 145°F (62.8°C) FOR CANADA)				
TANK SIZE	TANK TEMP.	SHOWER CAPACITY (15 MIN.)	MINIMUM INLET TEMP.	OPTION SELECTED
119G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
120G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
200G	145°F/62.8°C	1	35°F/1.7°C	
	165°F/73.9°C	1	32°F/0°C	
318G	145°F/62.8°C	2	50°F/10°C	
	165°F/73.9°C	2	39°F/3.9°C	
400G	145°F/62.8°C	2	35°F/1.7°C	N/A
	165°F/73.9°C	2	32°F/0°C	N/A

OPTIONS		DWG REF.
PUMP CONFIGURATION	NO PUMP	P5-0
	RECIRCULATION PUMP	P5-1
JUNCTION BOX TYPE RATING	TYPE 4, STEEL	P7-0
	TYPE 4X, 304 SST	P7-1
ALARM (IN USE)	NONE	-
	ISOLATED DRY CONTACTS	P12-3
MIXING VALVE QTY.	SINGLE	P30-1
	DUAL	P30-2
EXPANSION TANK	NON-ASME	P10-T
	ASME	P10-A/E



THE ATTACHED DESIGNS ARE CONSIDERED TRADE SECRETS AND POTENTIALLY PATENTABLE. IN ACCORDANCE WITH CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT, THESE DESIGNS IN ACTUAL OR CONCEPTUAL FORMS CANNOT BE DISCLOSED, REPRODUCED OR USED WITHOUT HAWS' EXPRESS WRITTEN CONSENT.

CUSTOMER INFO/TAG #:		Haws 1455 KLEPPE LANE SPARKS, NEVADA 89431 USA	
JOB NUMBER:	DRAWN BY:	TITLE	
07/26/21	IR	ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH	
CHECKED BY:	CHECKED DATE:	NOTICE OF PROPRIETARY INFORMATION	
DW	12/11/23	INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.	
APPROVED BY:	APPROVAL DATE:	SCALE	SIZE PART NO.
IR	12/11/23	1:16	C 0580001087.D-GA
		GA	SH 1 OF 1
			REV. 4

NOTES:

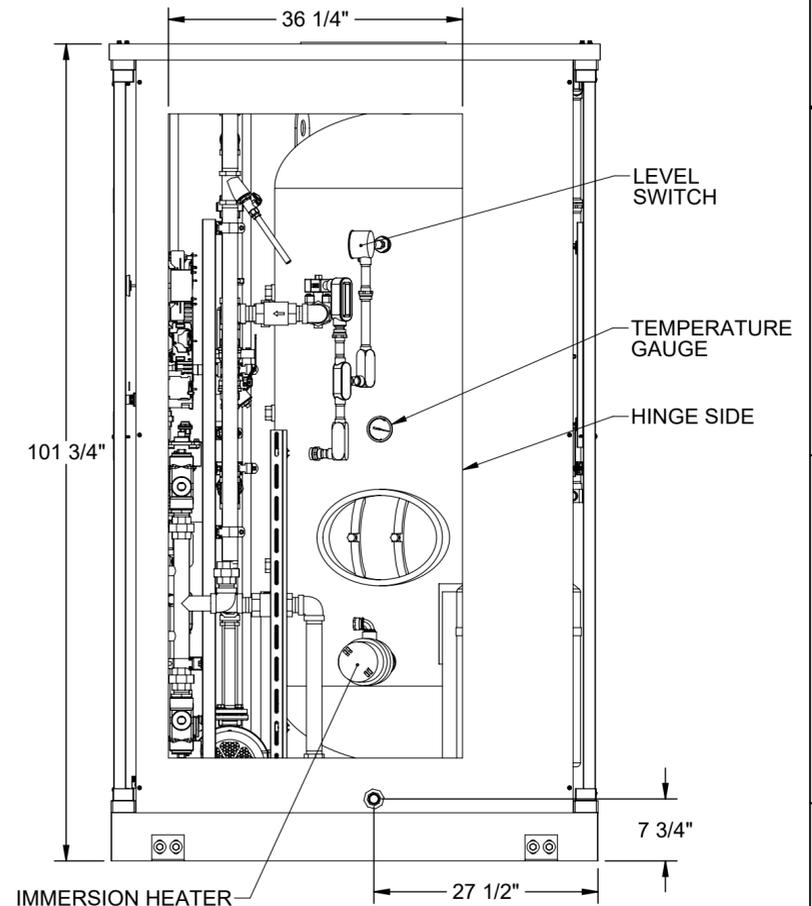
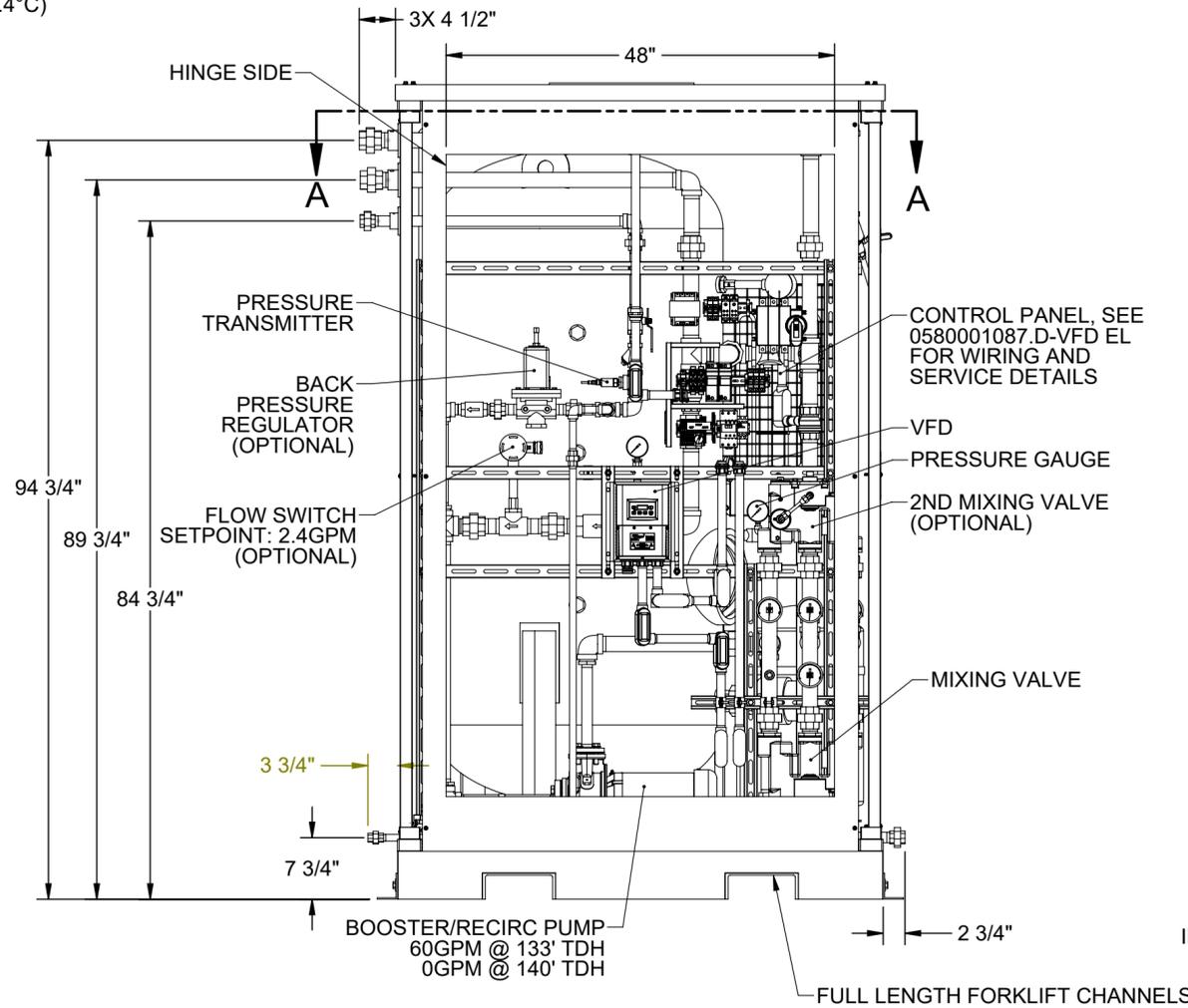
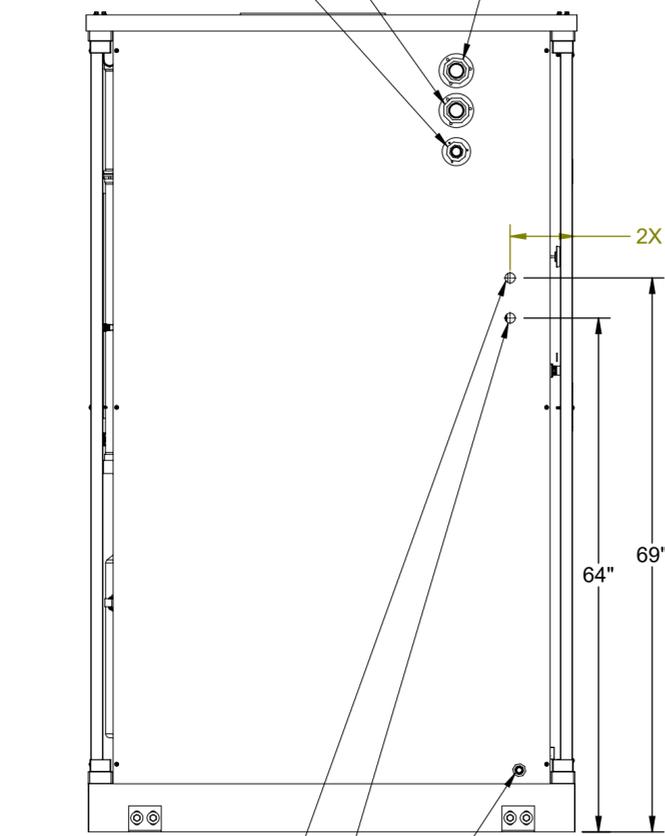
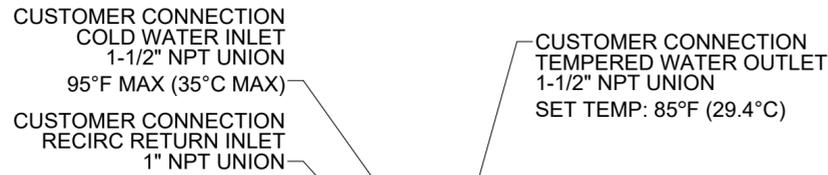
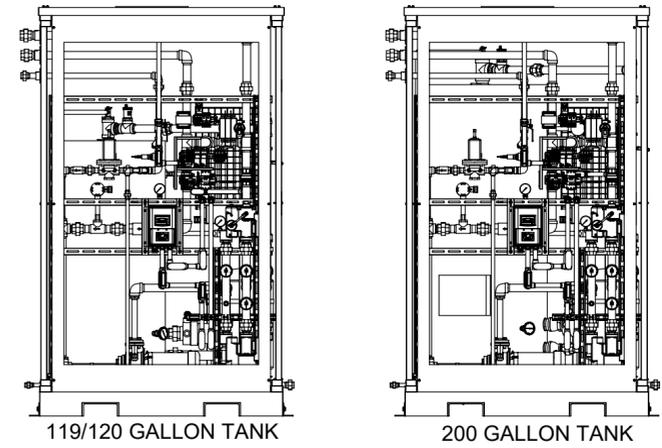
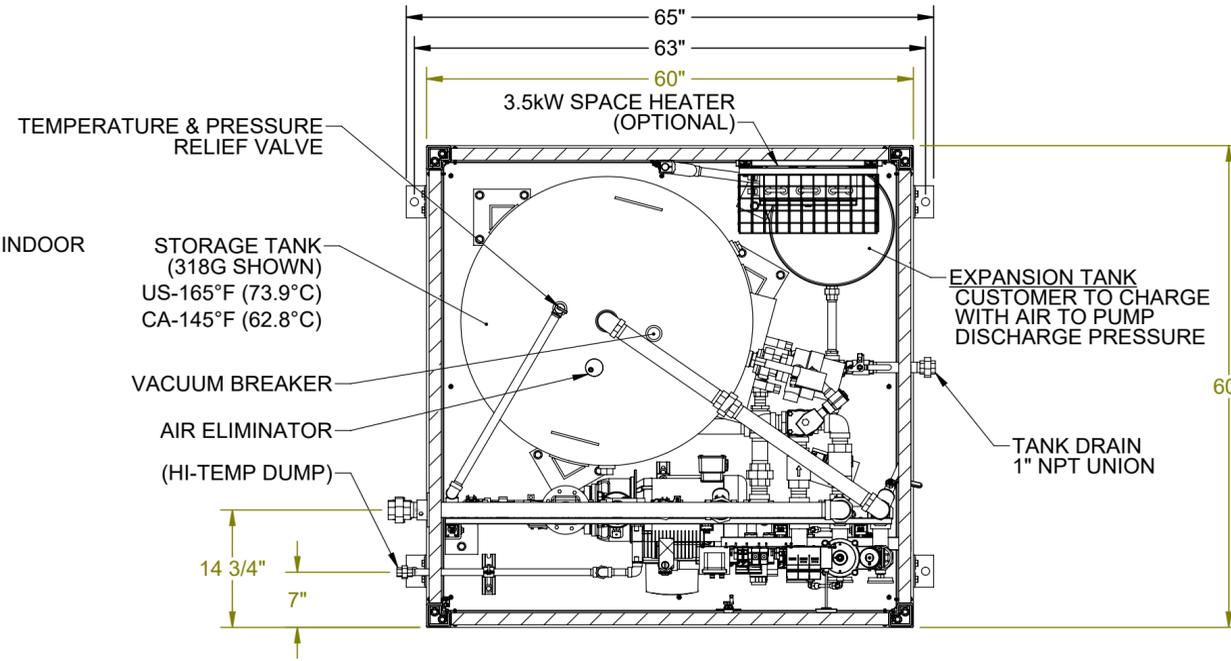
- DIMENSIONS IN INCHES.
- ALL TOLERANCES: $\pm 1/2"$
- ESTIMATED WEIGHT:
 DRY: 1300 LB
 WET: 4000 LB
- AREA CLASSIFICATION: ORDINARY
- AVAILABLE AMBIENT TEMPERATURE RANGES:
 $-50^{\circ}\text{F}-104^{\circ}\text{F}$ ($-45.6^{\circ}\text{C}-40^{\circ}\text{C}$), $32^{\circ}\text{F}-104^{\circ}\text{F}$ ($0^{\circ}\text{C}-40^{\circ}\text{C}$)
- NOT ALL FEATURES ARE STANDARD
- RECOMMENDED RECIRCULATION FLOWRATE: 10GPM
- PRESSURE TRANSMITTER SETPOINT IS TYPICALLY SET TO 30PSI + ELEVATION CHANGE FROM SKID TO HIGHEST SHOWER (1FT = .433PSI)
- A BACK PRESSURE REGULATOR IS REQUIRED FOR THE FOLLOWING CONDITION: SUPPLY PRESSURE < 30PSI + ELEVATION CHANGE FROM SKID TO HIGHEST SHOWER RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION

OPTIONS		DWG REF.
PUMP CONFIGURATION	BOOSTER/RECIRC W/ VFD	P5-3
JUNCTION BOX TYPE RATING	TYPE 4, STEEL	P7-0
	TYPE 4X, 304 SST	P7-1
ALARM (IN USE)	NONE	-
	ISOLATED DRY CONTACTS	P12-3
MIXING VALVE QTY.	SINGLE	P30-1
	DUAL	P30-2

MODELS WITH VFD RECIRC/BOOSTER PUMP

REVISIONS				
REV	DESCRIPTION	ECN	DATE	BY
4	PER ECO	5963	11/22/2023	DW

TANK SIZE				
(TANK TEMPERATURES ARE SET AT 165°F (73.9°C) FOR USA AND 145°F (62.8°C) FOR CANADA)				
TANK SIZE	TANK TEMP.	SHOWER CAPACITY (15 MIN.)	MINIMUM INLET TEMP.	OPTION SELECTED
119G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
120G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
200G	145°F/62.8°C	1	35°F/1.7°C	
	165°F/73.9°C	1	32°F/0°C	
318G	145°F/62.8°C	2	50°F/10°C	
	165°F/73.9°C	2	39°F/3.9°C	
400G	145°F/62.8°C	2	35°F/1.7°C	N/A
	165°F/73.9°C	2	32°F/0°C	N/A

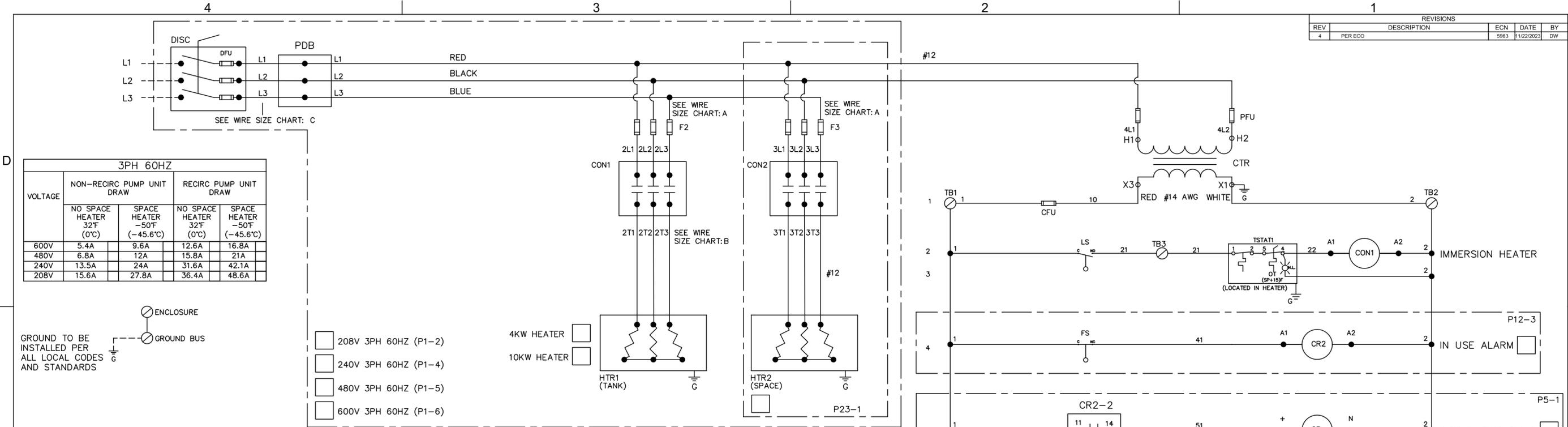


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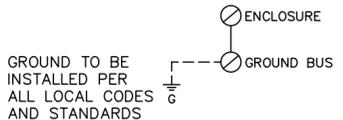
CUSTOMER INFO/TAG #:		Haws 1455 KLEPPE LANE SPARKS, NEVADA 89431 USA	
JOB NUMBER:	IR	TITLE	
DRAWN BY:	IR	ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH	
DRAWN DATE:	07/26/21	NOTICE OF PROPRIETARY INFORMATION	
CHECKED BY:	DW	INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.	
CHECKED DATE:	12/11/23	GA	SH 1 OF 1
APPROVED BY:	IR	SCALE	SIZE PART NO.
APPROVAL DATE:	12/11/23	1:16	C 0580001087.D-VFD GA
			REV. 4

Electrical Schematics (0580001087.D-EL, 0580001087.D-VFD EL)

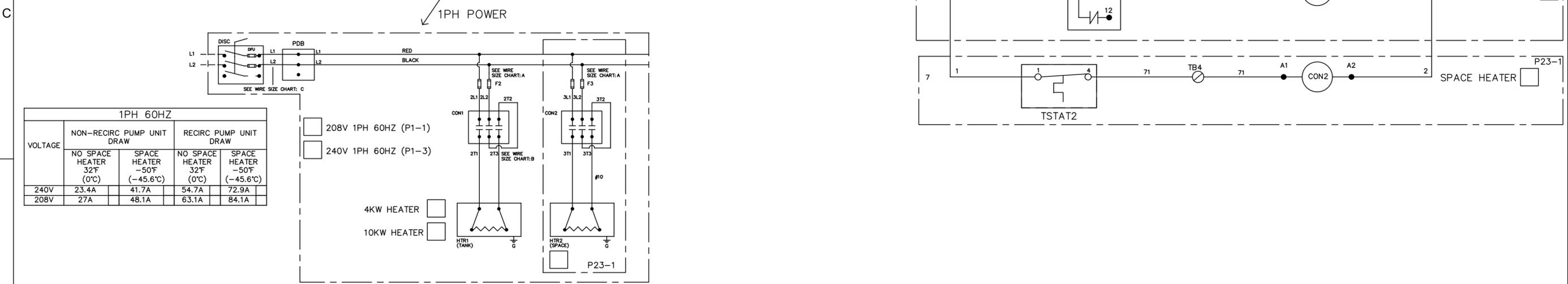
REVISIONS			
REV	DESCRIPTION	ECN	DATE
4	PER ECO	5963	11/22/2023



3PH 60HZ				
VOLTAGE	NON-RECIRC PUMP UNIT DRAW		RECIRC PUMP UNIT DRAW	
	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)
600V	5.4A	9.6A	12.6A	16.8A
480V	6.8A	12A	15.8A	21A
240V	13.5A	24A	31.6A	42.1A
208V	15.6A	27.8A	36.4A	48.6A



- 208V 3PH 60HZ (P1-2)
- 240V 3PH 60HZ (P1-4)
- 480V 3PH 60HZ (P1-5)
- 600V 3PH 60HZ (P1-6)



1PH 60HZ				
VOLTAGE	NON-RECIRC PUMP UNIT DRAW		RECIRC PUMP UNIT DRAW	
	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)
240V	23.4A	41.7A	54.7A	72.9A
208V	27A	48.1A	63.1A	84.1A

- 208V 1PH 60HZ (P1-1)
- 240V 1PH 60HZ (P1-3)

NON-RECIRC PUMP CONFIGS. FUSE CHART						
	DFU		F2	F3	PFU	CFU
208V 1PH	60A		25A	25A	1.25A	1A
240V 1PH	60A		25A	25A	1A	1A
208V 3PH	30A		15A	15A	1.25A	1A
240V 3PH	30A		12A	12A	1A	1A
480V 3PH	30A		6A	6A	.5A	1A
600V 3PH	30A		5A	5A	.5A	1A
FUSE TYPE	JKS(30-100) JLS(30-100)		KLKR(5-30) KTK(5-30)	KLKR(5-30) KTK(5-30)	KLDR(0.5-6) FNQ(0.5-6)	KLDR(0.5-6) FNQ(0.5-6)

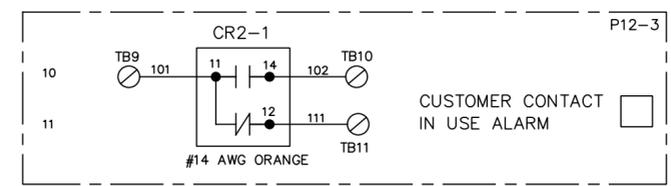
RECIRC PUMP CONFIGS. FUSE CHART						
	DFU		F2	F3	PFU	CFU
208V 1PH	100A		60A	25A	6A	5.6A
240V 1PH	100A		60A	25A	5.6A	5.6A
208V 3PH	60A		35A	15A	6A	5.6A
240V 3PH	60A		30A	12A	5.6A	5.6A
480V 3PH	30A		15A	6A	2.8A	5.6A
600V 3PH	30A		12A	5A	2A	5.6A
FUSE TYPE	JKS(30-100) JLS(30-100)		JLS(35-60) JKS(35-60) KLKR(12-30)	KLKR(5-30) KTK(5-30)	KLDR(0.5-6) FNQ(0.5-6)	KLDR(0.5-6) FNQ(0.5-6)

- COMPONENT DESIGNATION
- CFU - CONTROL POWER FUSE
 - CON1 - CONTACTOR 3 POLE, TANK HEATER
 - CON2 - CONTACTOR 3 POLE, SPACE HEATER
 - CP - CIRCULATING PUMP
 - CR2 - CONTROL RELAY FOR ALARM NOTIFICATION
 - CTR - CONTROL POWER TRANSFORMER
 - NON-RECIRC CONFIGS - 100VA @ 120V
 - RECIRC PUMP CONFIGS - 500VA @ 120V
 - DISC - DISCONNECT SWITCH
 - F2 - TANK HEATER FUSE
 - F3 - SPACE HEATER FUSE
 - FS - FLOW SWITCH
 - HTR1 - HEATER, TANK
 - NON-RECIRC CONFIGS - 4KW
 - RECIRC PUMP CONFIGS - 10KW
 - HTR2 - HEATER, SPACE, 3.5KW
 - LS - LEVEL SWITCH
 - PDB - POWER DISTRIBUTION BLOCK
 - PFU - PRIMARY FUSE
 - TB - TERMINAL BLOCK
 - TSTAT1 - TANK HEATER THERMOSTAT
 - TSTAT2 - SPACE HEATER THERMOSTAT

	WIRE SIZE CHART					
	A		B		C	
	4KW	10KW	4KW	10KW	4KW	10KW
208V 1PH	#8	#4	#10	#6	#4	#0
240V 1PH	#8	#4	#10	#8	#4	#0
208V 3PH	#10	#6	#12	#8	#8	#4
240V 3PH	#10	#8	#12	#8	#8	#4
480V 3PH	#12	#10	#12	#12	#8	#8
600V 3PH	#12	#10	#12	#12	#8	#8

CONDUCTOR TERMINAL RATING				
DISCONNECT SIZE	DISCONNECT		DRY CONTACTS	
	CONDUCTOR SIZE (AWG)	TORQUE VALUE (IN-LBS)	CONDUCTOR SIZE (AWG)	TORQUE VALUE (IN-LBS)
100A	14-2/0	133-194	14-20	PUSH-IN
60A	14-4	30-35		
30A	18-8	13-18		

CONTROL RELAY CONTACT RATINGS:
6A @ 250 VAC/30VDC RESISTIVE
SWITCH POSITION SHOWN FOR ALARM CONDITION



OPTIONAL FEATURE THAT CAN BE CONFIGURED WHEN PURCHASED

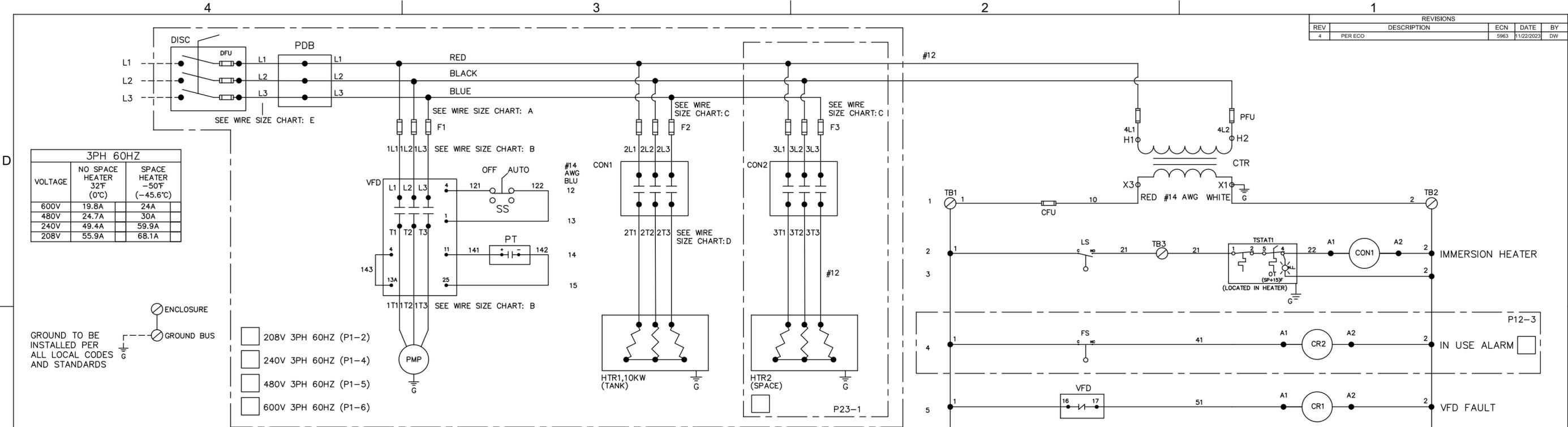
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NOTES:

- AREA CLASSIFICATION: ORDINARY
- AVAILABLE AMBIENT TEMPERATURE RANGES: -50°F - 104°F (-45.6°C - 40°C), 32°F - 104°F (0°C - 40°C)
- RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION

APPROVALS	DATE	1455 KLEPPE LANE SPARKS, NEVADA 89431 USA	
DRAWN IR	09/18/20		
CHECKED DW	12/07/23		
APPROVED IR	12/07/23		
JOB NUMBER			
TITLE:		8785 - ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH	
CUSTOMER INFO/TAG #:		NOTICE OF PROPRIETARY INFORMATION INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED, OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.	
SCALE	SIZE	PART NUMBER	REV
1	C	0580001087.D-EL	4

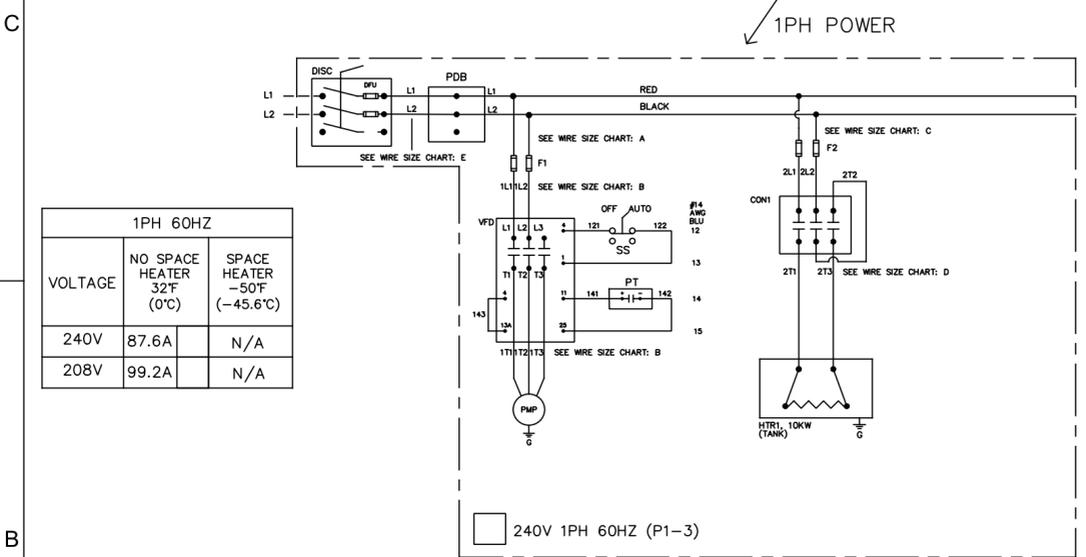
REVISIONS				
REV	DESCRIPTION	ECN	DATE	BY
4	PER ECO	5963	11/22/2023	DW



3PH 60HZ		
VOLTAGE	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)
600V	19.8A	24A
480V	24.7A	30A
240V	49.4A	59.9A
208V	55.9A	68.1A

GROUND TO BE INSTALLED PER ALL LOCAL CODES AND STANDARDS

- 208V 3PH 60HZ (P1-2)
- 240V 3PH 60HZ (P1-4)
- 480V 3PH 60HZ (P1-5)
- 600V 3PH 60HZ (P1-6)



1PH 60HZ		
VOLTAGE	NO SPACE HEATER 32°F (0°C)	SPACE HEATER -50°F (-45.6°C)
240V	87.6A	N/A
208V	99.2A	N/A

240V 1PH 60HZ (P1-3)

COMPONENT DESIGNATION

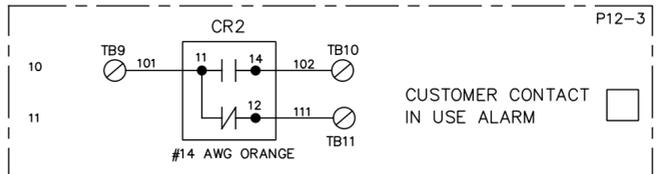
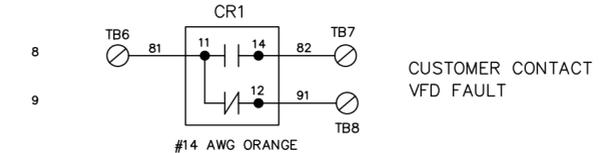
- CFU - CONTROL POWER FUSE
- CON1 - CONTACTOR 3 POLE, TANK HEATER
- CON2 - CONTACTOR 3 POLE, SPACE HEATER
- CR1 - CONTROL RELAY FOR ALARM NOTIFICATION
- CR2 - CONTROL RELAY FOR ALARM NOTIFICATION
- CTR - CONTROL POWER TRANSFORMER - 100VA @ 120V
- DISC - DISCONNECT SWITCH
- F1 - PUMP FUSE
- F2 - TANK HEATER FUSE
- F3 - SPACE HEATER FUSE
- FS - FLOW SWITCH
- HTR1 - HEATER, TANK, 10KW
- HTR2 - HEATER, SPACE, 3.5KW
- LS - LEVEL SWITCH
- PDB - POWER DISTRIBUTION BLOCK
- PFU - PRIMARY FUSE
- PMP - PUMP
- PT - PRESSURE TRANSMITTER
- SS - SELECTOR SWITCH OFF/AUTO
- SV - SOLENOID VALVE
- TB - TERMINAL BLOCK
- TSTAT1 - TANK HEATER THERMOSTAT
- TSTAT2 - SPACE HEATER THERMOSTAT
- VFD - VARIABLE FREQUENCY DRIVE

WIRE SIZE CHART					
	A	B	C	D	E
208V 1PH	#6	#8	#4	#6	#0
240V 1PH	#6	#10	#4	#8	#0
208V 3PH	#6	#12	#6	#8	#0
240V 3PH	#8	#12	#8	#8	#4
480V 3PH	#12	#12	#10	#12	#8
600V 3PH	#12	#12	#10	#12	#8

CONDUCTOR TERMINAL RATING				
DISCONNECT SIZE	DISCONNECT		DRY CONTACTS	
	CONDUCTOR SIZE (AWG)	TORQUE VALUE (IN-LBS)	CONDUCTOR SIZE (AWG)	TORQUE VALUE (IN-LBS)
100A	14-2/0	133-194	14-20	PUSH-IN
60A	14-4	30-35		
30A	18-8	13-18		

FUSE CHART						
	DFU	F1	F2	F3	PFU	CFU
208V 1PH	100A	45A	60A	N/A	1.25A	1A
240V 1PH	100A	45A	60A	N/A	1A	1A
208V 3PH	100A	30A	35A	15A	1.25A	1A
240V 3PH	60A	30A	30A	12A	1A	1A
480V 3PH	30A	20A	15A	6A	.5A	1A
600V 3PH	30A	12A	12A	5A	.5A	1A
FUSE TYPE	JKS(30-100) JLS(30-100)	JKLN(45) KLR(12-30) KTK (12-30)	JKS(35-60) KLR(12-30) KTK (12-30)	KLDR(0.5-6) FNQ(0.5-6)	KLDR(0.5-6) FNQ(0.5-6)	KLDR(0.5-6) FNQ(0.5-6)

CONTROL RELAY CONTACT RATINGS:
6A @ 250 VAC/30VDC RESISTIVE
SWITCH POSITION VAC FOR ALARM CONDITION



OPTIONAL FEATURE THAT CAN BE CONFIGURED WHEN PURCHASED

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NOTES:

- AREA CLASSIFICATION: ORDINARY
- AVAILABLE AMBIENT TEMPERATURE RANGES: -50°F - 104°F (-45.6°C - 40°C), 32°F - 104°F (0°C - 40°C)
- RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION

APPROVALS	DATE	1455 KLEPPE LANE SPARKS, NEVADA 89431 USA	
DRAWN IR	09/18/20		
CHECKED DW	12/07/23		
APPROVED IR	12/07/23	TITLE: 8785 - ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH W/VFD PUMP	
CUSTOMER INFO/TAG #:		NOTICE OF PROPRIETARY INFORMATION: INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED, OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.	
SCALE 1	SIZE C	PART NUMBER 0580001087.D-VFD EL	REV 4

Piping and Instrumentation Diagrams (0580001087.D-PID, 0580001087.D-VFD PID)

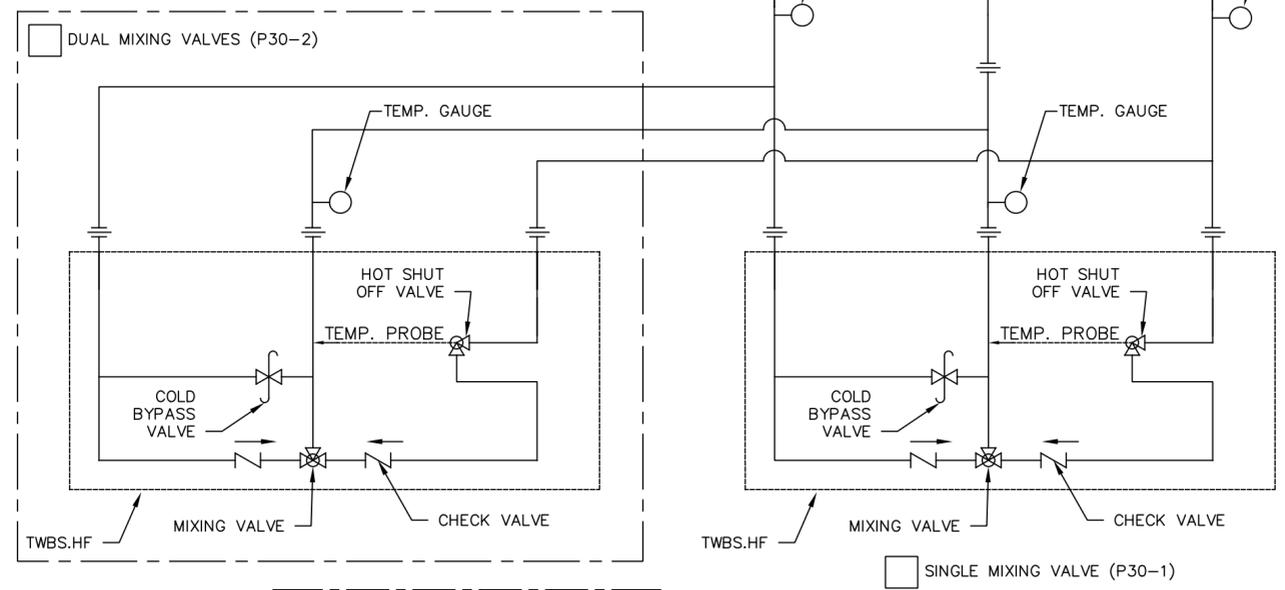
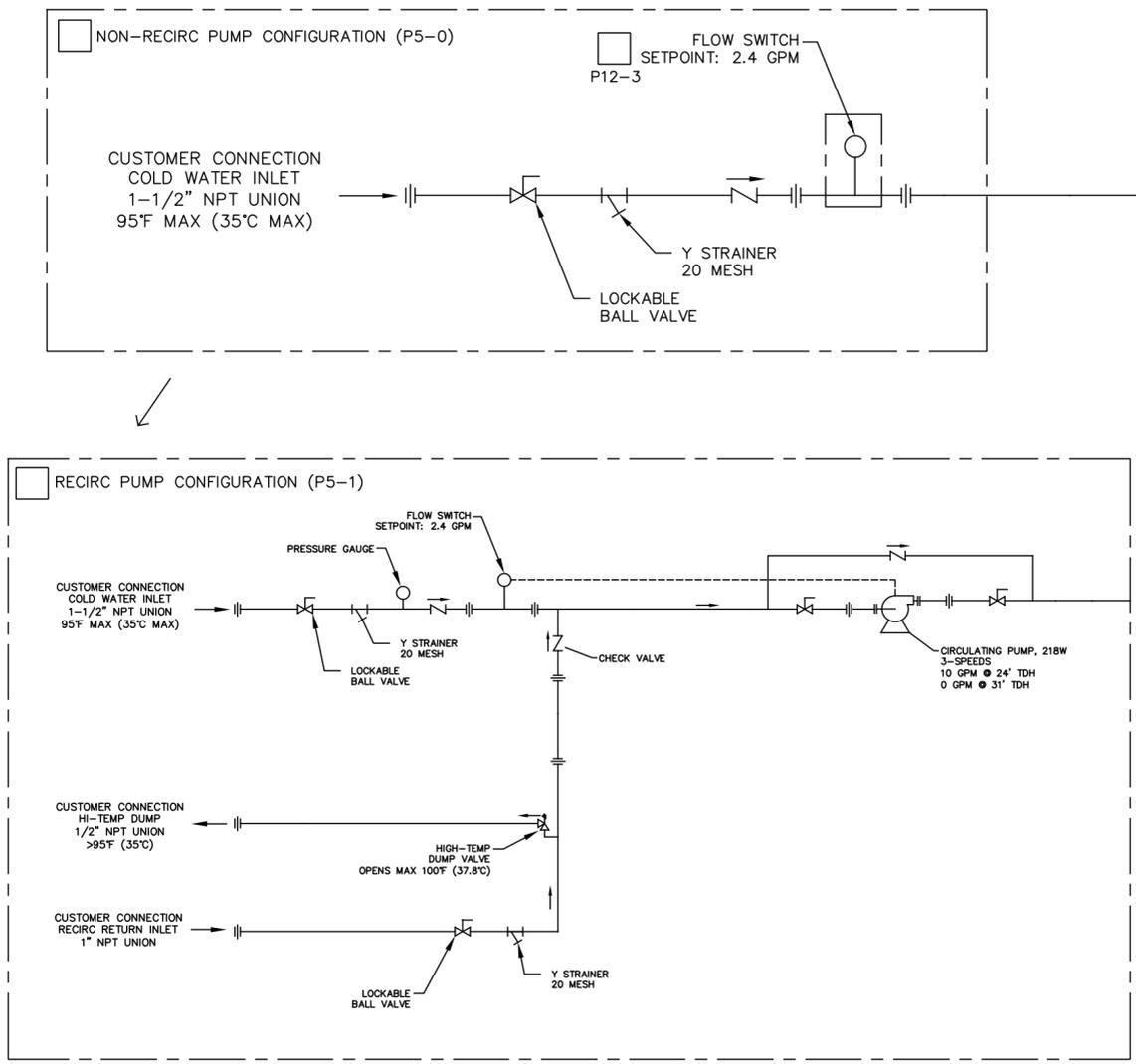
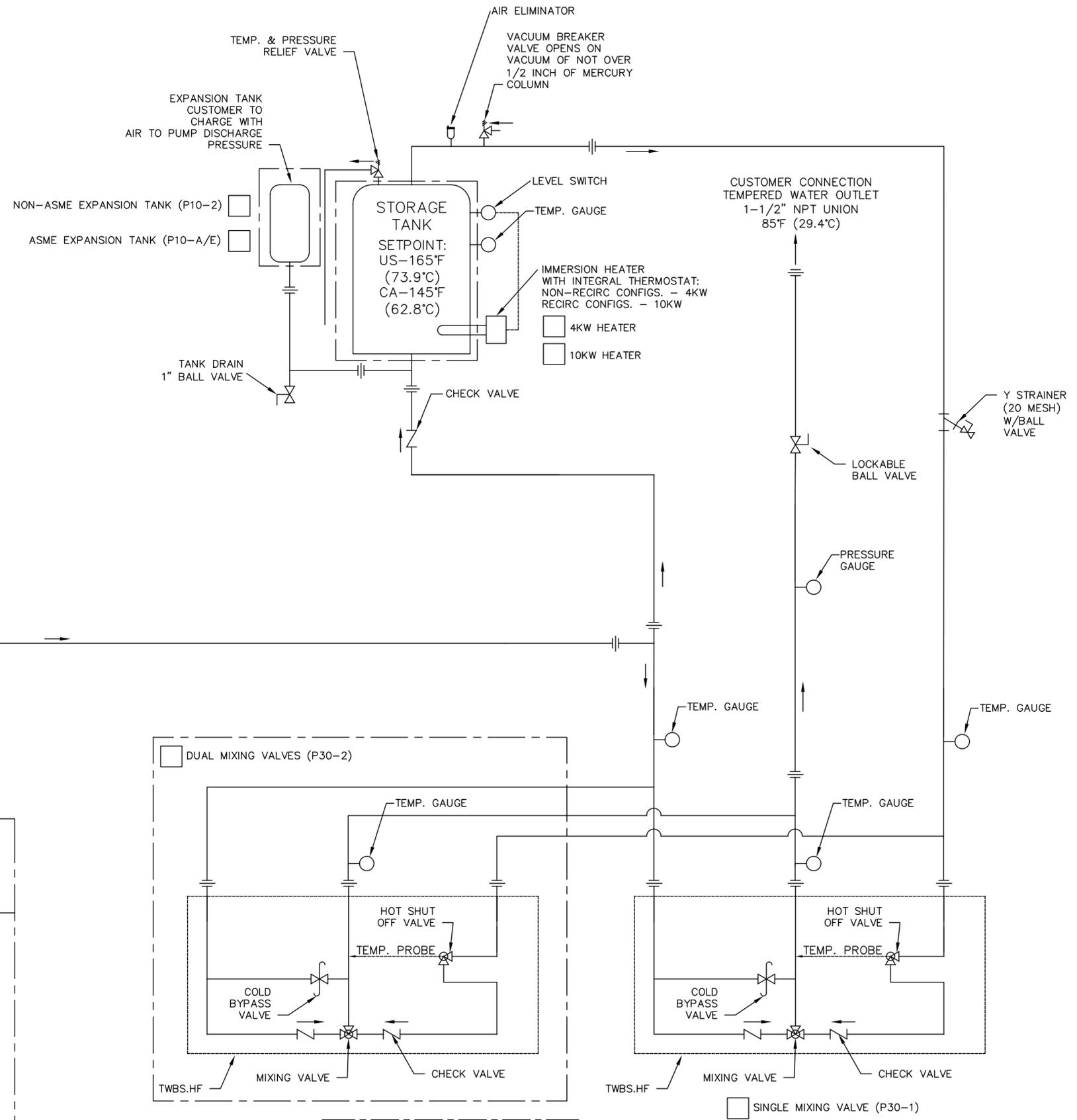
REV		REVISIONS		
REV	DESCRIPTION	ECN	DATE	BY
4	PER ECO	5963	11/22/2023	DW

- NOTES:
1. AREA CLASSIFICATION: ORDINARY
 2. AVAILABLE AMBIENT TEMPERATURE RANGE: -50°F - 104°F (-45.6°C - 40°C), 32°F - 104°F (0°C - 40°C)
 3. SEE TABLE 1 FOR PRESSURE DROP ACROSS SKID. SHOWERS AND EYEWASHES REQUIRE 30PSI MINIMUM AT THEIR HIGHEST FLOW RATE.
 4. RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION

PRESSURE DROP ACROSS SKID (SINGLE COMBINATION SHOWER FLOWS 30GPM)	
SKID CONFIGURATION	PRESSURE DROP
60GPM/SST PIPE/2 TWBS	17 PSI
60GPM/GALV PIPE/2 TWBS	24 PSI
60GPM/SST PIPE/1 TWBS	30 PSI
60GPM/GALV PIPE/1 TWBS	37 PSI
30GPM/SST PIPE/2 TWBS	4 PSI
30GPM/GALV PIPE/2 TWBS	6 PSI
30GPM/SST PIPE/1 TWBS	8 PSI
30GPM/GALV PIPE/1 TWBS	10 PSI

TABLE 1

TANK SIZE (TANK TEMPERATURES ARE SET AT 165°F (73.9°C) FOR USA AND 145°F (62.8°C) FOR CANADA)				
TANK SIZE	TANK TEMP.	SHOWER CAPACITY (15 MIN.)	MINIMUM INLET TEMP.	OPTION SELECTED
119G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
120G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
200G	145°F/62.8°C	1	35°F/1.7°C	
	165°F/73.9°C	1	32°F/0°C	
318G	145°F/62.8°C	2	50°F/10°C	
	165°F/73.9°C	2	39°F/3.9°C	
400G	145°F/62.8°C	2	35°F/1.7°C	N/A
	165°F/73.9°C	2	32°F/0°C	N/A



OPTIONAL FEATURE THAT CAN BE CONFIGURED WHEN PURCHASED

THE ATTACHED DESIGNS ARE CONSIDERED TRADE SECRETS AND POTENTIALLY PATENTABLE. IN ACCORDANCE WITH CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT, THESE DESIGNS IN ACTUAL OR CONCEPTUAL FORMS CANNOT BE DISCLOSED, REPRODUCED OR USED WITHOUT HAWS' EXPRESS WRITTEN CONSENT.

APPROVALS	DATE	 1455 KLEPPE LANE SPARKS, NEVADA 89431 USA	TITLE: 8785 - ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH
DRAWN	09/18/20		
CHECKED	12/07/23		
APPROVED	12/07/23		
CUSTOMER INFO/TAG #:		NOTICE OF PROPRIETARY INFORMATION INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED, OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.	THIRD ANGLE PROJECTION
SCALE: SIZE PART NUMBER		N/A C	P&ID SH OF 1 REV 4 0580001087.D-PID

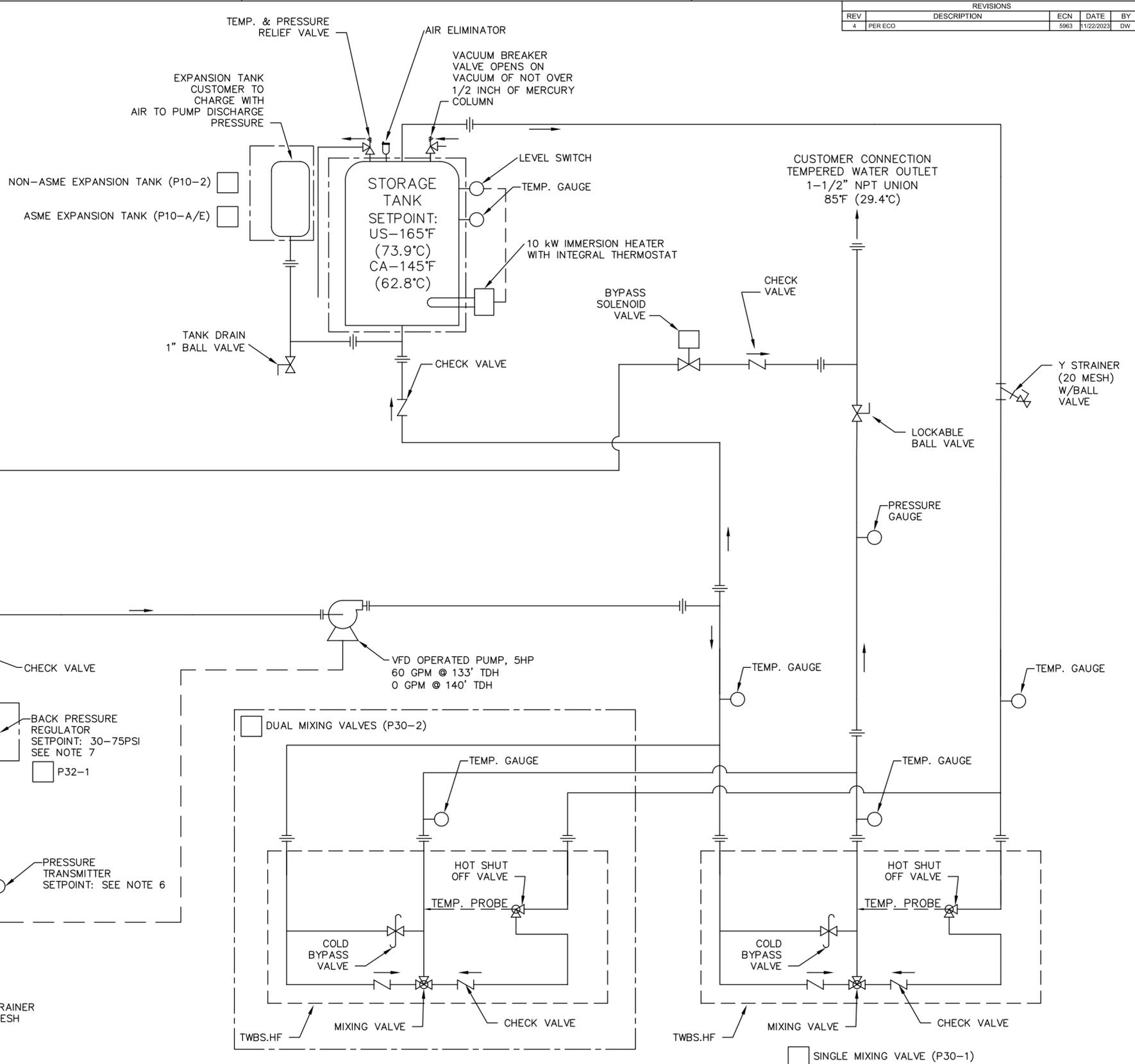
ALLOWABLE SHOWER LOOP PRESSURE DROPS
(20PSI INLET, ELEVATION GAIN INCLUDED, SINGLE COMBINATION SHOWER FLOWS 30GPM)

SKID CONFIGURATION	PRESSURE DROP
60GPM/SST PIPE/2 TWBS	30 PSI
60GPM/GALV PIPE/2 TWBS	24 PSI
60GPM/SST PIPE/1 TWBS	17.5 PSI
60GPM/GALV PIPE/1 TWBS	11 PSI
30GPM/SST PIPE/2 TWBS	43.5 PSI
30GPM/GALV PIPE/2 TWBS	42 PSI
30GPM/SST PIPE/1 TWBS	39.5 PSI
30GPM/GALV PIPE/1 TWBS	38 PSI

TABLE 1

TANK SIZE
(TANK TEMPERATURES ARE SET AT 165°F (73.9°C) FOR USA AND 145°F (62.8°C) FOR CANADA)

TANK SIZE	TANK TEMP.	SHOWER CAPACITY (15 MIN.)	MINIMUM INLET TEMP.	OPTION SELECTED
119G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
120G	145°F/62.8°C	1	62°F/16.7°C	
	165°F/73.9°C	1	54°F/12.2°C	
200G	145°F/62.8°C	1	35°F/1.7°C	
	165°F/73.9°C	1	32°F/0°C	
318G	145°F/62.8°C	2	50°F/10°C	
	165°F/73.9°C	2	39°F/3.9°C	
400G	145°F/62.8°C	2	35°F/1.7°C	N/A
	165°F/73.9°C	2	32°F/0°C	N/A



REVISIONS				
REV	DESCRIPTION	ECN	DATE	BY
4	PER ECO	5963	11/22/2023	DW

- NOTES:
1. AREA CLASSIFICATION: ORDINARY
 2. AVAILABLE AMBIENT TEMPERATURE RANGE: -50°F - 104°F (-45.6°C - 40°C), 32°F - 104°F (0°C - 40°C)
 3. RATINGS: CONFIGURABLE WITH TYPE 4/4X JUNCTION BOX FOR INDOOR OR OUTDOOR LOCATION
 4. SEE TABLE 1 FOR ALLOWABLE PRESSURE DROP FROM SKID OUTLET TO SHOWERS. PRESSURE DROP INCLUDES ELEVATION CHANGES. PRESSURE DROP VALUES GIVEN FOR SUPPLY PRESSURE OF 20PSI, IF SUPPLY PRESSURE IS HIGHER, ADD THE DIFFERENCE BETWEEN SUPPLY PRESSURE AND 20PSI TO THE PRESSURE DROP GIVEN TO GET ADJUSTED ALLOWABLE PRESSURE DROP. ALLOWABLE PRESSURE DROP SHOULD NEVER EXCEED 60PSI WITH OUT FURTHER ANALYSIS AS THIS COULD LEAD TO OVER-PRESSURIZING SHOWERS.
 5. RECOMMENDED RECIRCULATION FLOWRATE: 10GPM
 6. PRESSURE TRANSMITTER SETPOINT IS TYPICAL SET TO 30PSI + ELEVATION CHANGE FROM SKID TO HIGHEST SHOWER (1FT = .433PSI)
 7. A BACK PRESSURE REGULATOR IS REQUIRED FOR THE FOLLOWING CONDITION: SUPPLY PRESSURE < 30PSI + ELEVATION CHANGE FROM SKID TO HIGHEST SHOWER

OPTIONAL FEATURE THAT CAN BE CONFIGURED WHEN PURCHASED

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APPROVALS	DATE	<p>1455 KLEPPE LANE SPARKS, NEVADA 89431 USA</p>
DRAWN	09/18/20	
CHECKED	12/07/23	
APPROVED	12/07/23	
JOB NUMBER		<p>TITLE: 8785 - ALL-WEATHER EMERGENCY WATER TEMPERING BOOTH W/VFD PUMP</p> <p>NOTICE OF PROPRIETARY INFORMATION: INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF HAWS CORPORATION AND THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS NOT TO BE REPRODUCED, USED, OR DISCLOSED IN WHOLE OR IN PART TO ANYONE WITHOUT THE PERMISSION OF HAWS CORPORATION.</p>
CUSTOMER INFO/TAG #:		<p>THIRD ANGLE PROJECTION</p> <p>P&ID SH OF 1</p> <p>SCALE: SIZE PART NUMBER</p> <p>N/A C 0580001087.D-VFD-PID</p> <p>REV 4</p>

LIMITED WARRANTY

HAWS warrants that this specific product is guaranteed against defective material or poor workmanship for a period of **one year from date of shipment**. HAWS liability under this warranty shall be discharged by furnishing without charge F.O.B. HAWS Factory any goods, or part thereof, which shall appear to the Company upon inspection to be of defective material or not of first class workmanship, provided that claim is made in writing to Haws within a reasonable period after receipt of the product. Where claims for defects are made, the defective part or parts shall be delivered to the Company, prepaid, for inspection. HAWS will not be liable for the cost of repairs, alterations, or replacements, or for any expense connected therewith made by the owner or his agents, except upon written authority from HAWS, Sparks, Nevada. HAWS will not be liable for any damages caused by defective materials or poor workmanship, except for replacements, as provided above. Buyer agrees that Haws has made no other warranties either expressed or implied in addition to those above stated, except that of title with respect to any of the products or equipment sold hereunder and that HAWS shall not be liable for general, special, or consequential damages claimed to arise under the contract of sale.

The emergency equipment manufactured by HAWS is warranted to function if installation and maintenance instructions provided are adhered to. The units also must be used for the purpose for which they were intended. This product is intended to supplement first-aid treatment. Due to widely varying conditions, Haws cannot guarantee that the use of this emergency equipment will prevent serious injury or the aggravation of existing or prior injuries.

NO OTHER WARRANTIES EXPRESSED OR IMPLIED ARE AUTHORIZED, PROVIDED OR GIVEN BY HAWS.

SHOULD YOU EXPERIENCE DIFFICULTY WITH THE INSTALLATION OF THIS MODEL PLEASE CALL:

HAWS SERVICES: 1-800-766-5612

FOR CUSTOMER SERVICE: 1-888-640-4297

For more information on Haws products, see our website: www.hawsc.com

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SERVICE OVERVIEW



OVERVIEW

Haws services is a warranty and service provider for all brands of emergency shower and eye/face wash products to ensure your emergency equipment is ANSI compliant and functioning properly. From Start-up and Commissioning to Annual inspections and Preventative Maintenance, Haws Services experts specialize in emergency response equipment.

SERVICES MAINTENANCE DEFINITIONS

INSTALLATION

Mount and connect Haws Emergency Equipment to water and an electrical source per product specifications. Depending on the Scope of Work, Permits and accessibility, Haws may require onsite support to ensure installation and operating parameters are met.

START-UP AND COMMISSIONING

A comprehensive five-point service designed to enhance reliability of the emergency shower and eye/face wash Equipment. Service consists of (i) a review to determine whether the Equipment is installed correctly to manufacturer's specifications, (ii) an operational check to test proper functioning of the unit, (iii) detailed training on how to operate the Equipment, (iv) guidance on how to maintain the Equipment with recommended preventative maintenance requirements, and (v) guidance on how to trouble shoot the Equipment. CUSTOMER is provided with a checklist and debriefing upon completion.

ANNUAL INSPECTIONS

An annual inspection service to validate compliance with ANSI Z358.1 requirements. Service consists of (i) a check of the installation of the Equipment, as well as activation of the Equipment to determine if the Equipment meets the performance requirements of the ANSI standard, (ii) the delivery of an executive summary of the current state of the Equipment, and (iii) a detailed inspection report for each item of Equipment identifying and documenting gaps in compliance, potential root causes, and recommendations.

PREVENTATIVE MAINTENANCE

Proactively clean, inspect and replace necessary parts and/or units to enhance proper functionality and longevity of Equipment. On-site personnel are trained to make the inspections and checks throughout the year to reduce failure and promote readiness and compliance of the Equipment.

COMPETENT PERSON TRAINING

Online or onsite training on the ANSI Standards and how to conduct the required weekly activations and annual inspections specified by ANSI for the Equipment. The service consists of (i) delivery of ANSI measurement devices and easy to follow, step-by-step guidelines on how to perform the inspections and checks, (ii) delivery of a written test to determine comprehension of training materials. Ideal for site personnel who are responsible for doing the weekly activations and annual inspections of the Equipment.

REPAIRS & UPGRADES

Onsite repairs and/or upgrades by qualified service technicians who are subject matter experts in emergency shower and eye/face wash Equipment and the relevant ANSI standards.

PERSONNEL QUALIFICATIONS

ANSI Z358.1 SUBJECT MATTER EXPERTS All onsite technicians have a thorough working knowledge of the ANSI Z358.1 requirements and can perform repairs and/or make recommendations to ensure proper functionality and compliance.

ELECTRICAL All onsite technicians can troubleshoot and manage different types of electrical systems through reading Electrical Schematics and understanding requirements to ensure compliance with the National Electrical Code.

PLUMBING All onsite technicians can perform maintenance and repairs through reading P&ID's and figures to understand the layout of water supply, and venting systems. All technicians have comprehensive knowledge of Installing, repairing, and maintaining emergency shower and eye wash equipment.

SAFETY All onsite technicians must be OSHA 10 or OSHA 30 certified as well as trained in Lockout/Tagout, Arc Flash Prevention and other site-specific requirements. All technicians are subject to random drug testing and background checks as required.