Installation, Operation, & Maintenance Manual

Lync Aegis Heat Exchanger Module Mark II

Single Heat Exchanger

Dual Heat Exchanger

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Hot Water Solutions

Lync • 425 W Everman Pkway, St. 101 • Fort Worth, TX 76134
USA: T: (817) 335-9531
Technical Support • (800) 433-5654 (ext. 1) • Mon-Fri, 8 am - 5 pm CST

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SECTION 1. SAFETY CONSIDERATIONS

IMPORTANT!

Read the complete installation instructions BEFORE using this equipment. Failure to read and follow all safety information and operating instructions can result in death, serious personal injury, property damage, or damages to the equipment. Keep this guide for future reference.

Accidental scalding from hot water is a greater risk in certain facilities, including:

- Homes For The Physically or Mentally Disabled
- Hospitals
- Nursing Homes and Assisted Living Facilities
- Foster And Child Care Facilities

Potable hot water should be no more than 110°F when used for bathing or other personal use anywhere contact with hot water may be slower, or the danger of hot water contact is greater.

IMPORTANT!

- Always follow local code requirements and the rulings of authorities having jurisdiction.
- Thermostatically controlled mixing valves must be used in the design of the potable hot water system.
- Good engineering practice mandates that thermostatically controlled mixing valves are set at 120°F or less to keep the delivered water temperature below scalding temperatures. It only takes five seconds of skin contact with 140°F water to cause a second degree burn. You must protect against high water temperatures in all sinks, tubs, showers and other points of hot water contact.

⚠WARNING!

- If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death. Never store or use gasoline or other flammable vapors and liquids near this or any other appliance.
  Installation and service must be performed by a qualified installer, or service agency who must read and follow the manual before installing, servicing, or removing the unit.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury, exposure to hazardous materials, or death. Never not use matches, candles, flames, or other sources of ignition to check for gas leaks.
- Fluids under pressure may cause injury to personnel or damage to equipment when released. Be sure to shut off all incoming and outgoing water shutoff valves and carefully decrease all trapped pressures to zero before performing maintenance.
- The electrical connection cover must be installed at all times, except during maintenance.
- A disconnect switch must be installed at the electrical service connection per local codes.

IMPORTANT!

This manual contains information required for the installation, operation and maintenance of the Lync AEGIS HEAT EXCHANGER Module. Read and follow the information in this and all other provided instructions, labels and markings before installing, operating or servicing this equipment.

1.1. General Warnings

Read the following before continuing:

- This manual is an integral part of the product and must be kept for consultation.
- The unit must not be used with functions other than those described.
- Before continuing, check the application limits.
- The company reserves the right to change the composition of its products without notice.

1.2. Safety Precautions

- Use the module only within the intended operating limits.
- Make sure cables for the probes and the power supply are kept separate without twisting.

For applications in especially critical industrial environments, it may be useful to use network filters.

CAUTION!

Disconnect all electrical connections before starting any maintenance work. As with any electrical product, care should be taken to guard against the potential risk of fire, electric shock, and injury to persons.

SECTION 2. INTRODUCTION

The Aegis Heat Exchanger Module is designed to supply domestic hot water as part of a Lync Aegis heat pump water heater system. The Heat Exchanger Module serves several key functions:

- Provides flexible flow conditions to HP which can minimize cycling and improve efficiency
- Protects refrigerant loop gas cooler against potential degradation from incoming city water
- Allow a glycol primary loop for outdoor air-source installations in freezing conditions white providing double-wall separation

The Heat Exchanger Module is designed in-house with HP selection criteria to reduce engineering time and complexity versus 'stick built' alternatives. It is manufactured with quality WATTS components to provide true single point accountability.

2.1 Models

The Heat Exchanger comes in two versions: single heat exchanger for use with Aegis 250 units, and dual heat exchanger for Aegis 350 and 500 units.

The model, serial number, voltage, and maximum working pressure are shown on labels affixed to the machine.

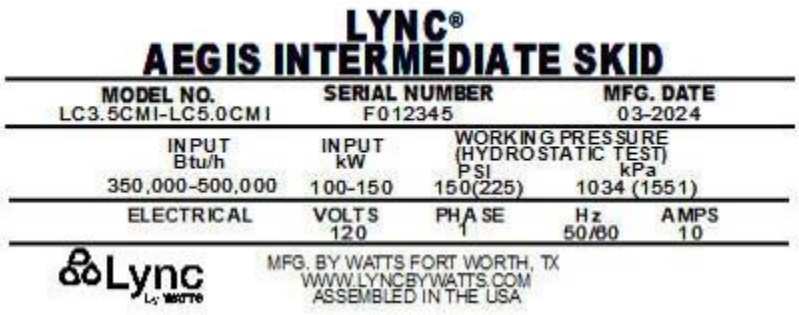


Figure 1 – Example Heat Exchanger Module Data Label

2.2 Main Components

The Aegis Heat Exchanger Module is divided into two halves, a primary (closed) loop back to the heat pump, and a secondary (domestic hot water) loop that feeds the storage tanks. Each loop has one constant speed pump. The flow in the loops is varied by a motorized valve to maintain the desired temperature in the loop. Other required primary and secondary system components, such as strainers, relief valves, expansion tank, isolation valves, unions, a thermowell, and filling/discharge points are also included.

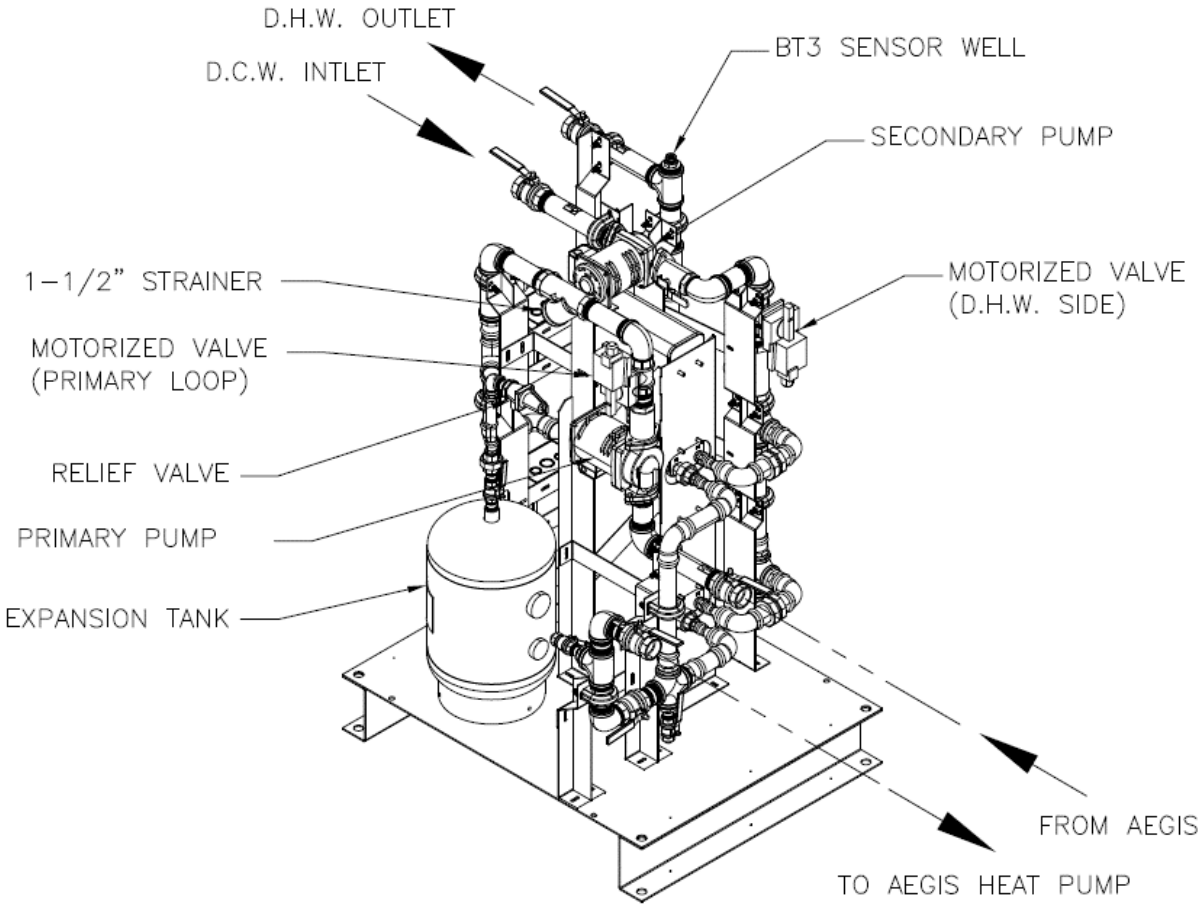


Figure 2 – Mark II Heat Exchanger Module Major Components

2.3 Unit Control

The primary and secondary loop temperatures are controlled by adjusting the water flow rate through the use of modulating valves. The Aegis is responsible for sending control signals to these valves as well as communicating with all required temperature sensors. Descriptions of the Aegis wiring and control points may be found in L-OMM-013 Lync Aegis Electronic Controller Manual.

Additionally, the Aegis heat pump control manages the circulation of water in order to ensure that the correct temperature rise in the system is maintained. This will determine the need for hot water recovery by monitoring the water temperature in the storage tanks.

2.4 Sequence Of Operation

The hot water storage tanks used in this heating system must be equipped with the provided temperature sensors, or other sensors meeting requirements for a NTC 10k temperature sensor. The (BT1) sensor (cold side probe) is placed in the bottom of the first storage, near cold return water connection. The BT2 sensor (hot side probe) is located in the top of the last storage tank in the series, near the supply outlet.

The BT3 sensor is located on the outlet of the external heat exchanger and is used to control the temperature rise across the Heat Exchanger Module. Installation of BT1, BT2, and BT3 probes must be done by the installer prior to operation.

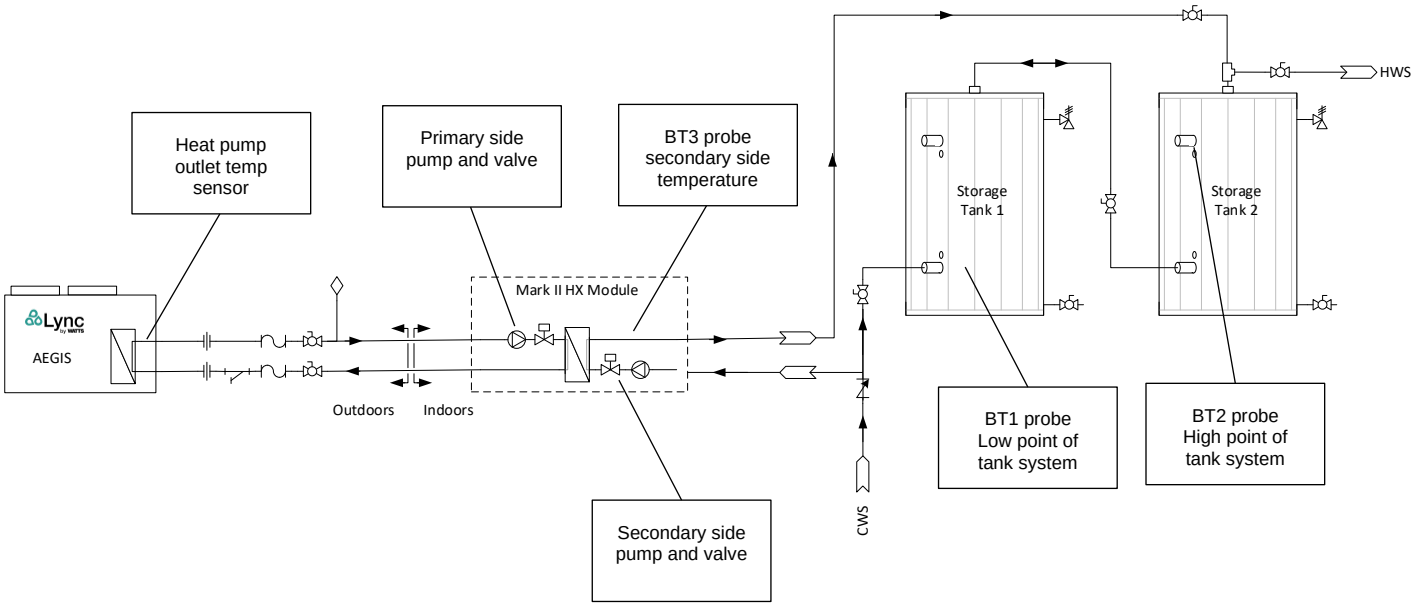


Figure 3: Probe Locations

When the temperature probe BT1 reaches the value "Set point unit ON", (set point (ST03) minus differential (ST04)), the unit will be turned on. The unit will continue to heat the water to the set temperature as long as the temperature BT1 remains below the “Set point unit OFF” value (ST03). Once BT1 reaches "Set point unit OFF" the unit will be turned off.

The heat pump’s outlet sensor will control the primary loop to a fixed temperature setpoint ST01, modulating the primary side valve and flow rate to maintain outlet temperature.

The Aegis also manages the secondary valve (domestic hot water loop) position according to the BT3 probe. The BT3 probe measures the temperature out of the heat exchanger module and into the storage tanks. This temperature is controlled by ST01 plus an offset setpoint SP02. For the Mark II heat exchanger module this offset is set to -10°F. For example, if ST01 is set to 170°F and offset SP02 is -10°F, the secondary loop valve will control to a setpoint of 160°F into the storage tanks. Please see Aegis Electronic Controller Manual (L-OMM-013) for further details.

SECTION 3. INSTALLATION

The Aegis Heat Exchanger Module is available in indoor and outdoor versions. The outdoor configuration includes a sheet metal enclosure to protect against rain. If freezing conditions are expected, an appropriate glycol-water solution must be used to prevent accidental freeze damage when the heat pump is not operating. Lync recommends no greater than 40% glycol in any application due to potential viscosity and corrosion concerns. For specific recommendations on glycol types, fill percentages, and specific heat changes, contact your glycol manufacturer.

The following must be taken into account when choosing where to install and connect the unit:

- size and origin of the hydraulic piping
- location of the power supply
- accessibility for maintenance or repairs
- stability of the support surface
- orientation and exposure to solar radiation
- possible sound reverberation

The clearances specified in the dimensional drawing of the unit MUST be followed. The unit must always be anchored to the ground.

The Heat Exchanger Module ships pre-assembled on a skid base. Housekeeping pads are not required for Heat Exchanger Module installation. The unit must be installed flat and horizontally.

The Heat Exchanger Module should never be installed in the same location where chemicals are stored. Examples of such chemicals are ice melting salt and chlorine for pool treatment. This is not an exhaustive list. If there are any questions about the unit's suitability for a particular environment, contact your local Lync representative.

3.1 Spaces For Installation

The spaces needed to accommodate the unit are shown on dimensional drawings AP-L-1086 for the single unit and AP-L-1088 for the dual unit, available at lyncbywatts.com.

It is advisable to leave sufficient space between the units for removing their larger components such as the exchangers and pumps.

3.2 Storage

The Heat Exchanger Module is drained of water prior to shipping. Small amounts of water may remain behind in the piping and in the heat exchanger(s). When transporting and storing the Heat Exchanger Module prior to installation, it must remain in storage that does not experience freezing temperatures to prevent damage to the unit.

3.3 Lifting And Transport

While unloading and positioning the unit, take extreme care to avoid sudden, violent movements. Avoid applying force to components of the machine. The unit may be lifted using assistance from a forklift, inserting the lifting forks in the lifting pallet (see Figure 4).

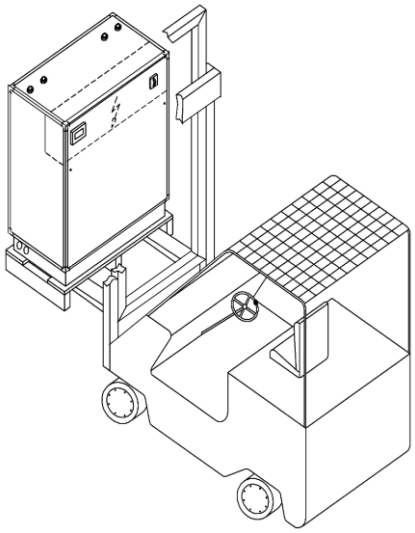


Figure 4: Lifting the Unit with Forklift

3.4 Available Pump Head

The table below shows available pump heat for each Aegis model under the highest expected flow conditions.

Model	Available Pressure, Primary Side (ft head)	Available Pressure, Secondary Side (ft head)
Aegis A 250	20.6	30.2
Aegis A 350	23.2	27.4
Aegis A 500	17.8	20.3
Aegis W 250	37.5	32.9
Aegis W 350	35.2	30.1
Aegis W 500	30.9	24.8

3.5 General Recommendations For Hydraulic Connection

⚠WARNING!

The units may produce hot water at temperatures as high as 194°F (90°C). All hydronic components must be selected for this temperature.

When setting up the hydraulic circuit for the Heat Exchanger Module, users should use the tips and steps below, and remain in compliance with national and local regulations. Lync recommends users connect the piping to the heat pumps using flexible joints in order to minimize vibrations and compensate for thermal expansion.

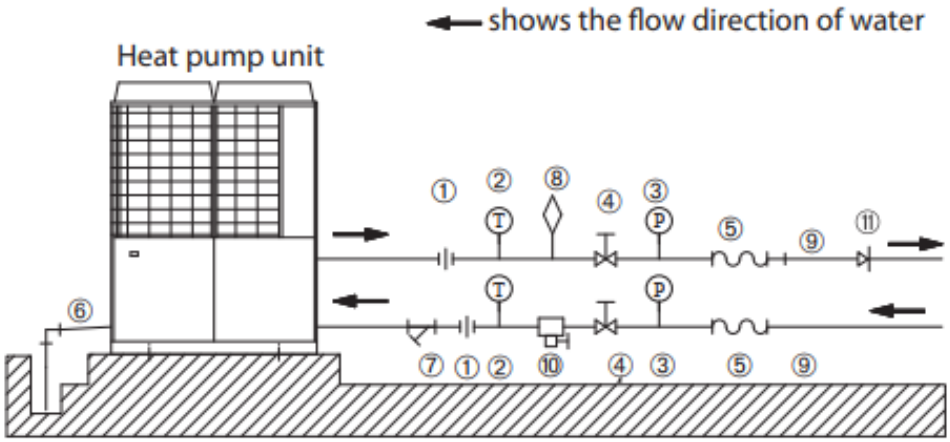
Install the following components on the piping:

- Stop cocks, temperature and pressure indicators for maintenance and inspection.
- Sample points on the input and output pipes to read the temperature, if temperature indicators are not present.
- Shut-off valves to isolate the unit from the circuit.
- Use metal mesh filters with openings 1/16" (1 mm) or less on the exchanger inlet pipe to protect the exchanger against slag or impurities in the pipes.
- Air eliminators must be installed at the highest parts of the hydraulic circuit in order to allow excess air to be released.
- Use the expansion tank and automatic charging valve to maintain the system pressure and to compensate for thermal expansion.
- Drain valves and where necessary, drain the tank to empty the system for maintenance operations or seasonal breaks.

IMPORTANT!

A safety relief valve is installed on the primary side of the Heat Exchanger Module. If an over-pressure condition should arise in the system, this allows the system to be drained to prevent an explosion. Always connect the discharge pipe to a drain with a diameter no less than that of the valve opening and direct it towards the areas where the discharge cannot harm anyone.

3.5.1 Recommended Hydraulic Circuit



1. Union joint: Enables the unit to be removed for maintenance or replacement.
2. Thermometer: Used for capacity checks and operation monitoring.
3. Water pressure gauge: Checks operating status.
4. Valve: For cleaning the heat exchanger and/or replacing unit.
5. Flexible joint: Prevents vibrations through system piping.
6. Strainer (60 mesh or more): Install strainer at the inlet port to avoid any foreign matter entering the unit.
7. Check valves: Must be installed when installing multiple heat pumps.
8. Air elimination valve: Install this at the highest point in the piping where air may accumulate.
9. Water piping: Water piping work must be done by a qualified installer.
10. Drain valve: Drains off the water from the system during servicing.

Figure 5: Recommended Water Piping

3.5.2 Key Considerations For Water Piping

Water quality: It is important to check in advance whether the feed water and hot water have good quality. Be sure to use water within the ranges specified in Section 3.7.

If solid matter such as sand piping debris, scale deposits, or floating suspended solids (i.e., any corrosion product in the water), the heat-transfer surface of the heat exchanger is directly attacked by water flow, and corrosion may be created. In order to avoid such corrosion by these substances, be sure to fit a cleanable strainer (60 mesh /0.25mm or smaller) at the water inlet port of the unit to remove any debris.

Depending on the type of metal, certain metals may cause localized corrosion when they make contact with each other. Including non-conductive materials between metals the metals can limit corrosion.

Water piping should have no leaks or air intrusion. If air is introduced at the suction side of pumps, the pump may create excess noise and performance may decrease.

For units exposed to freezing temperatures, take precautions to prevent the freezing of piping.

NOTE: Aegis A has a freeze protection function, but Aegis W does not. For any outdoor piping that may experience freezing conditions it is recommended to include a proper glycol mixture in the primary loop in case of power loss if the piping will be exposed to freezing temperatures. Contact your glycol supplier for further details on freeze protection.

Units installed indoors or in warmer climates should NOT have glycol included in the mixture.

3.6 Hydraulic Connection To The Heat Pump

IMPORTANT!

The primary circuit should be set up in such a way as to guarantee a constant flow of water to the exchanger in all operating conditions. If this is not the case, there is a risk of refrigerant returning to the compressor input in a liquid state, which could damage the compressor.

⚠WARNING!

Do not operate hydraulic connections with open flame near or inside the unit.

IMPORTANT!

To ensure the correct operation of each pump on the machine:

- Before starting, check that the pump shaft rotates freely, without mechanical impediments.
- Do NOT run the pump dry, unprimed, and below the minimum nominal water flow rate.
- Do NOT operate the pump with closed shut-off valves, on the suction and delivery side.
- NEVER use the pump when cavitation occurs.
- It is mandatory to fill and bleed the hydraulic circuit correctly before starting the pump.

3.7 Water Composition

Dissolved substances in the water can cause damage to the heat exchangers. It is mandatory to verify that the water parameters comply with this table:

Total hardness	1.2 to 3.5 grains/gal [2.0 to 6.0 °F]
Langelier index	- 0.4 to + 0.4
pH	7.5 to 8.5
Electrical conductivity	10 to 500 QS/cm
Organic element	-
Hydrogen carbonate (HCO3-)	70 to 300 ppm
Sulphates (SO_4^{2-})	< 50 ppm
Hydrogen carbonate / Sulphates (HCO_3^-/SO_4^{2-})	> 1
Chlorides (Cl-)	< 50 ppm
Nitrates (NO3-)	< 50 ppm
Sulphuric acid (H2S)	< 0.05 ppm
Ammonia (NH3)	< 0.05 ppm
Sulphites (SO3), free chlorine (Cl2)	< 1 ppm
Carbon dioxide (CO2)	< 5 ppm
Metal cations	< 0.2 ppm
Manganese ions (Mn^{++})	< 0.1 ppm
Iron ions (Fe^{2+}, Fe^{3+})	< 0.2 ppm
Iron + Manganese	< 0.5 ppm
Phosphates (PO43-)	< 2 ppm
Oxygen	< 0.1 ppm

Table 1 – Water Quality Requirements

If water is used that does not meet the criteria in the table, the warranty is immediately rendered null and void.

It is mandatory to set up a system that eliminates the possible organic substances in the water that could pass through the filter and settle in the heat exchangers, which would lead to malfunction and/ or damage over time.

If the water used in the unit contains organic substances, the warranty is immediately rendered null and void.

3.8 Discharge of Safety Valves

⚠WARNING!

To avoid personal injury and property damage due to valve operation, the safety valve must be installed so that any discharge runs to a safe place of disposal. Consult with your local plumbing codes and standards for any additional requirements.

SECTION 4: WIRING AND ELECTRIC CONNECTIONS

4.1 Overview

- The electrical connections must follow the information shown on the wiring diagram attached to the unit and the local regulations of where the unit is being installed.
- Verify that the power supply voltage corresponds to the nominal data of the unit (voltage, number of phases, frequency), as stated on the plate on the machine.
- The power supply voltage must not undergo variations over ±5%.

IMPORTANT!

- Use power cable fixing systems that resist abrasion and twisting stress.
- Make sure there is no voltage present before performing any operation on electric parts.
- The section of the cable and the line protections must follow the wiring diagram and the relevant table attached to the unit.
- The unit must operate with those limits; failure to do so will immediately void the warranty.

4.2 Low Voltage and Sensors

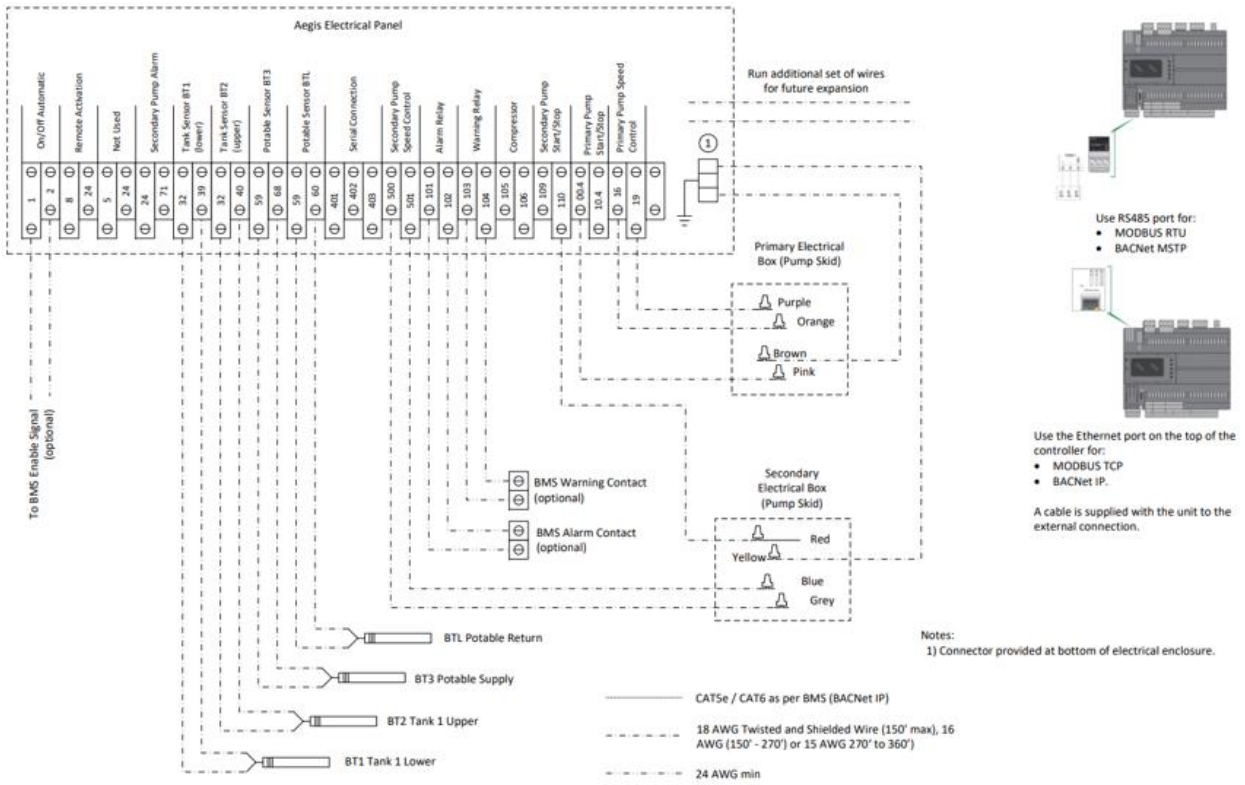


Figure 6 – Low Voltage Connections to Aegis

4.3 High Voltage

The Mark II Heat Exchanger Module only requires a 120V single phase 15 A power supply.

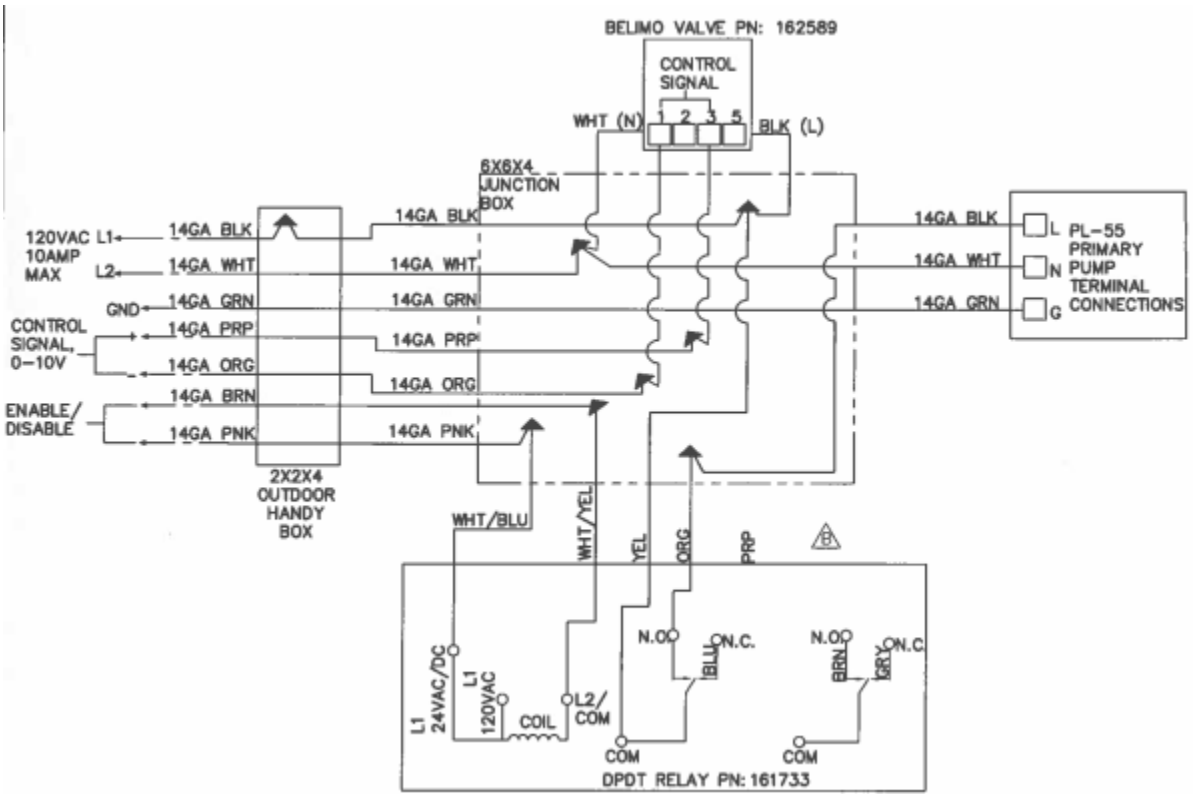


Figure 7 – Heat Exchange Module Wiring

4.4 Controller Function

Refer to the Lync Aegis Controller Manual L-OMM-013, supplied separately.

SECTION 5: STARTUP

⚠WARNING!
The machine should be started up only by authorized and qualified personnel.

Additional startup details may be found in L-OMM-012 Installation, Operation, and Maintenance Manual.

5.1 Preliminary Verifications

Check for the following conditions before startup:

- Electrical connection has been implemented correctly and that all clamps are tightly fastened.
- Phase voltage on the RST clamps is 460 V ± 5% (line voltage should show 277V +/- 3%)). If the voltage is subject to frequent variations, contact Lync technical services or your local rep for the selection of relevant protections.
- Pressure in the refrigerant circuits is shown on the control display.
- Use a leak detector intended for R-744 refrigerant to check for any refrigerant fluid leaks.
- the power supply of the guard resistances

⚠WARNING!
The resistances must be inserted at least 12 hours before the initial start-up, and takes place automatically when the master switch is closed.

To check the correct functioning of the resistances, check that the lower part of the compressors is hot and is at a temperature of 5-8°F (10-15°C) over the environmental temperature.

- Check that the hydraulic connections have been made correctly, with attention to the indications on the input/output plates on the machine.
- Check that the hydraulic system has been bled, thereby eliminating all residual air and loaded gradually, opening the vent devices in the upper part, which the installer would have set up together with an expansion tank of adequate capacity.

IMPORTANT!
Before starting-up, verify that all the closing panels of the unit are in place and secured.

⚠WARNING!
All the units are pre-loaded with refrigerant gas, so the refrigerant circuit is pressurized. There is no need to charge the refrigerant circuit before unit start up.

NOTE: Additional information on startup is available in the Aegis Startup Checklist in L-OMM-012, Appendix A.

5.2 Filling the unit

It is critical when filling the primary loop to ensure all air is removed from the loop. Air separators must be used in the primary loop to ensure air is removed. The unit may be filled with a dedicated water fill line, or through the drain ports located on the heat exchanger module.

If connected to an Aegis A unit in an area that may experience freezing temperatures, it is recommended to add glycol to prevent accidental freeze damage.

5.3 Verifications During Operation

- Check that the sequence of the phases is correct. This can be verified by making sure that the fans are rotating in the correct direction (see Section 5.3). The fan should be pulling air in the side of the heat pump and directing it up out the top of the unit.
- Check that gas cooler inlet water temperature is near the electronic control setpoint.

SECTION 6. DECOMMISSIONING

6.1 Seasonal Shutdown

- The Aegis heat pump water heater is designed for year-round operation. In the case that prolonged shutdown is expected, be sure to follow these steps
- Drain the hydraulic system (unless it contains glycol water).
- Repeat the procedure outlined in Section 5 on successive start-ups.

6.2 Emergency Stop

To stop in an emergency, turn off the main switch to power off the entire machine.

IMPORTANT!

Never modify the internal electrical connections, otherwise the warranty is immediately rendered null and void.

Disconnect voltage from the unit only in the case of prolonged shutdowns, to leave the compressors guard heating resistances powered.

⚠WARNING!

Do not use the main power switch to enable or disable the heat pump: this device should be used to isolate the unit from the power supply when the unit is OFF. Removing voltage entirely depowers the guard resistances, jeopardizing the integrity of the compressor.

SECTION 7. PERIODIC MAINTENANCE AND INSPECTIONS

⚠WARNING!

Before performing any service on the unit or accessing internal parts, make sure that the power supply has been disconnected.

The inverter of the compressor contains various parts that remain live for a few minutes after the power supply has been disconnected at the main switch.

Before any maintenance:

- Turn off the power to the Heat Exchanger Module by the field-provided power switch and the Aegis by the main power switch.
- Use a multimeter to make sure there is no voltage at the heads of the clamps.

7.1 Overview

It is good practice to carry out periodic inspections to verify the proper operation of the unit:

OPERATION	FREQUENCY
Check the functioning of relief valve.	Annually
Check for water or water/glycol mixture leaks in the hydraulic circuit.	Monthly
If the unit is to remain out of service for a long period, drain the water from the pipes and the heat exchanger. This is necessary whenever room temperatures are lower than the freezing point of the fluid used throughout the standstill period.	Seasonal
Clean the strainers on the primary and secondary side of the heat exchanger module.	Annually
In the case of hard water, it may be necessary to run a descaling solution through the primary loop of the heat exchanger.	Annually, or as required by site conditions

IMPORTANT!

Routine maintenance of the unit is essential to the life of the machine. A lack of maintenance can cause malfunctioning and/or damage to the unit and render the warranty null and void.

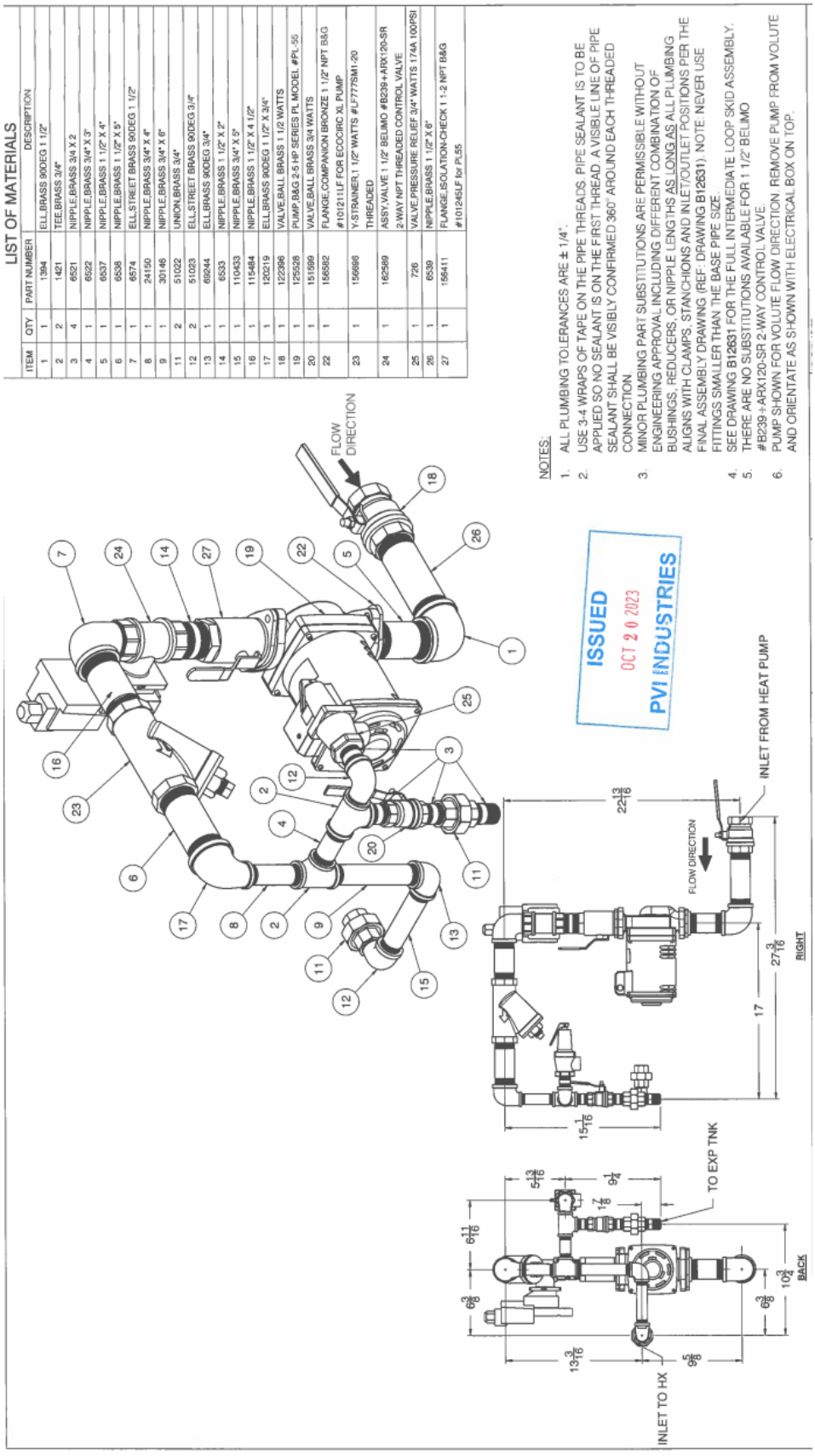
SECTION 8. TROUBLESHOOTING

Symptom	Cause	Corrective Action
High outlet temperature fault on Aegis	Insufficient primary loop flow.	Ensure **all** air has been removed from primary loop. Even small amounts of air will cause insufficient flow Verify primary pump operation Verify primary valve opening on command Verify Aegis output signal is set to 0-10V
High outlet temperature fault on Aegis	Insufficient secondary loop flow	Verify secondary pump operation Verify secondary valve opening on command Verify Aegis output signal is set to 0-10V
High outlet temperature fault on Aegis	Primary valve not operating	Verify control wiring polarity

SECTION 9. DISPOSAL OF THE UNIT

When the unit has reached the end of its intended duration and must be removed and replaced, the unit's structure and components, if no longer usable, should be taken down and grouped by the type of material. The unit contains large amounts of copper and steel. Separating the materials will help collection, disposal, and recycling centers and minimize the environmental impact.

APPENDIX A. MARK II SINGLE PARTS DRAWINGS

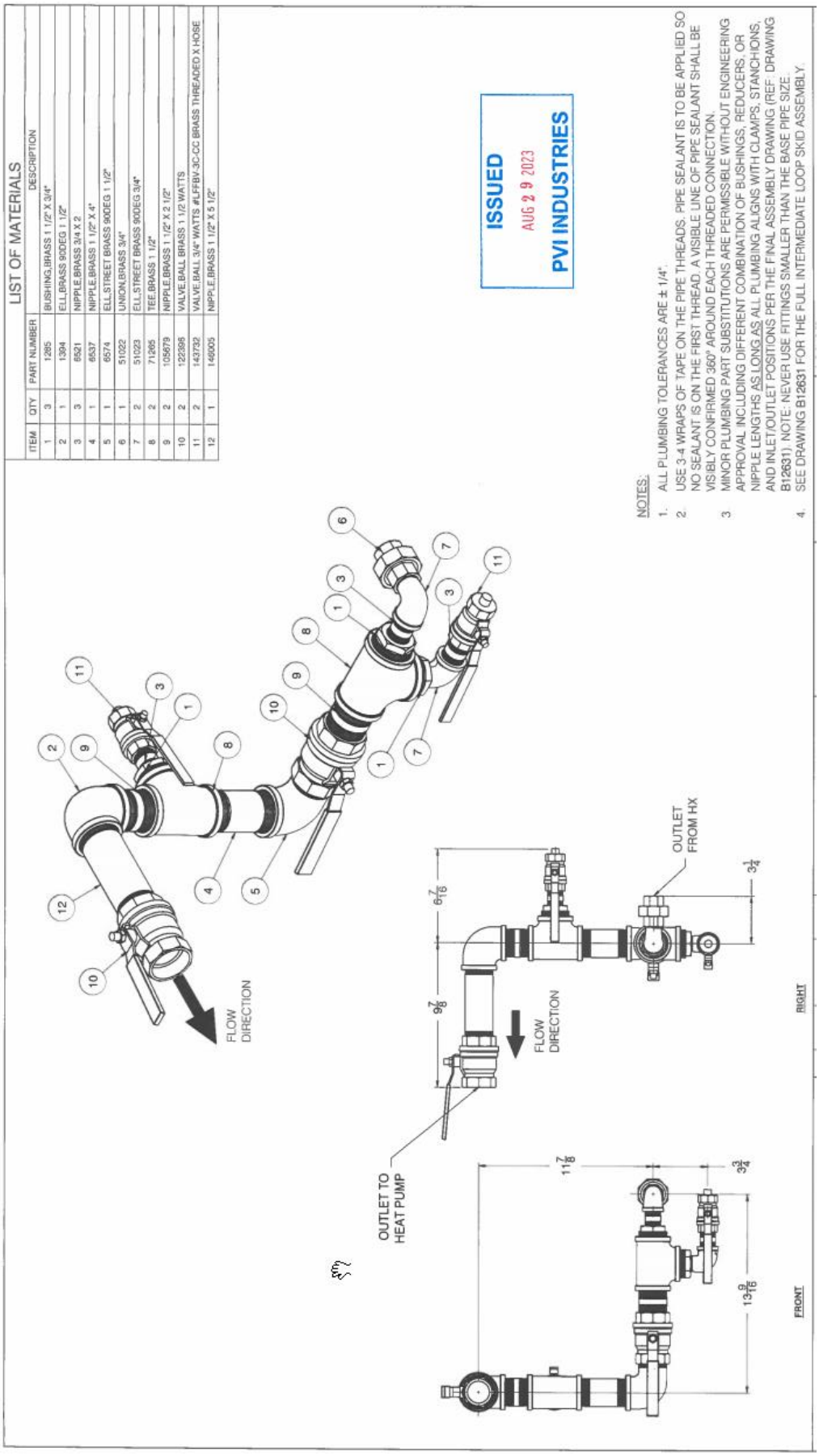


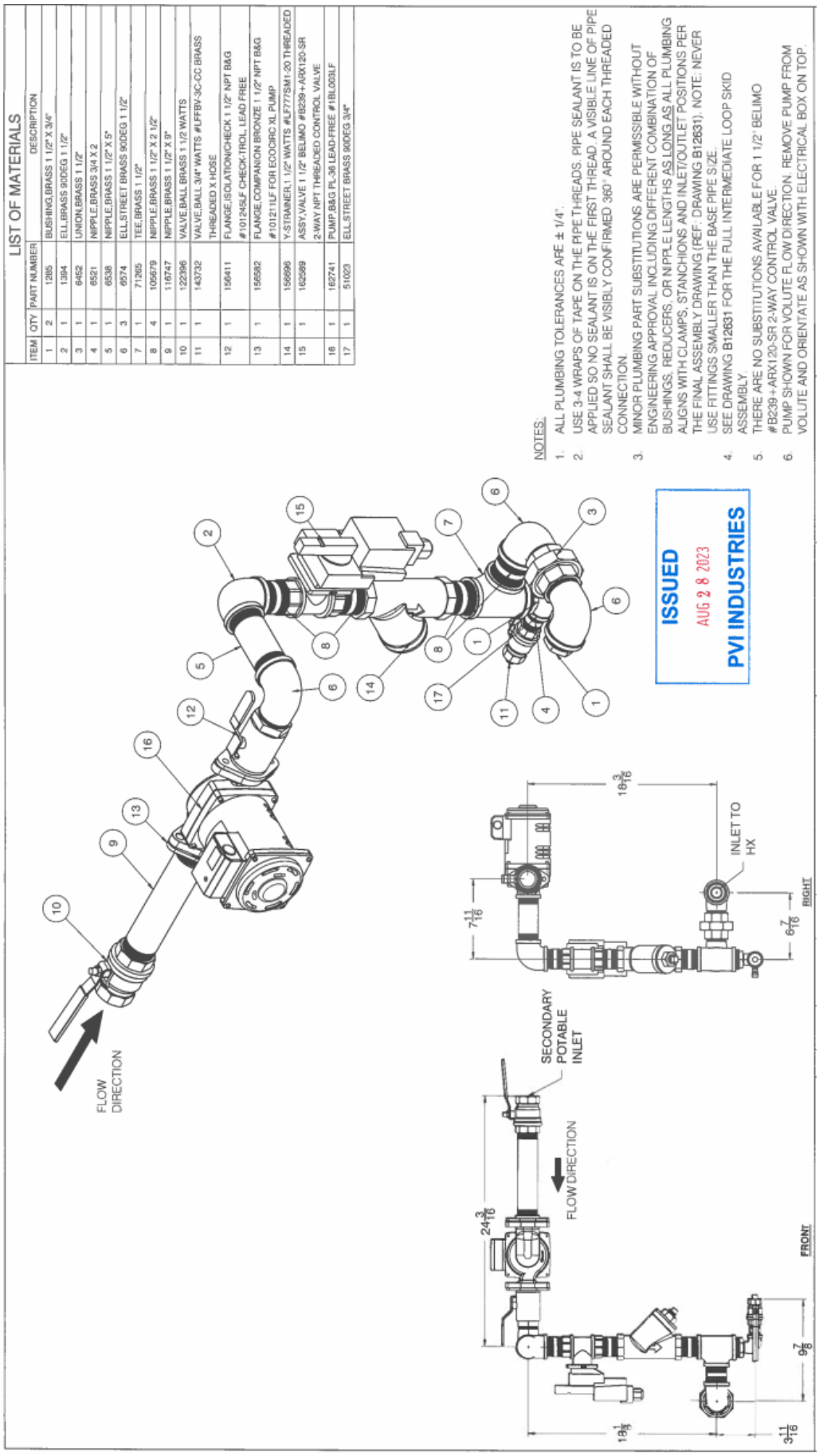
LIST OF MATERIALS

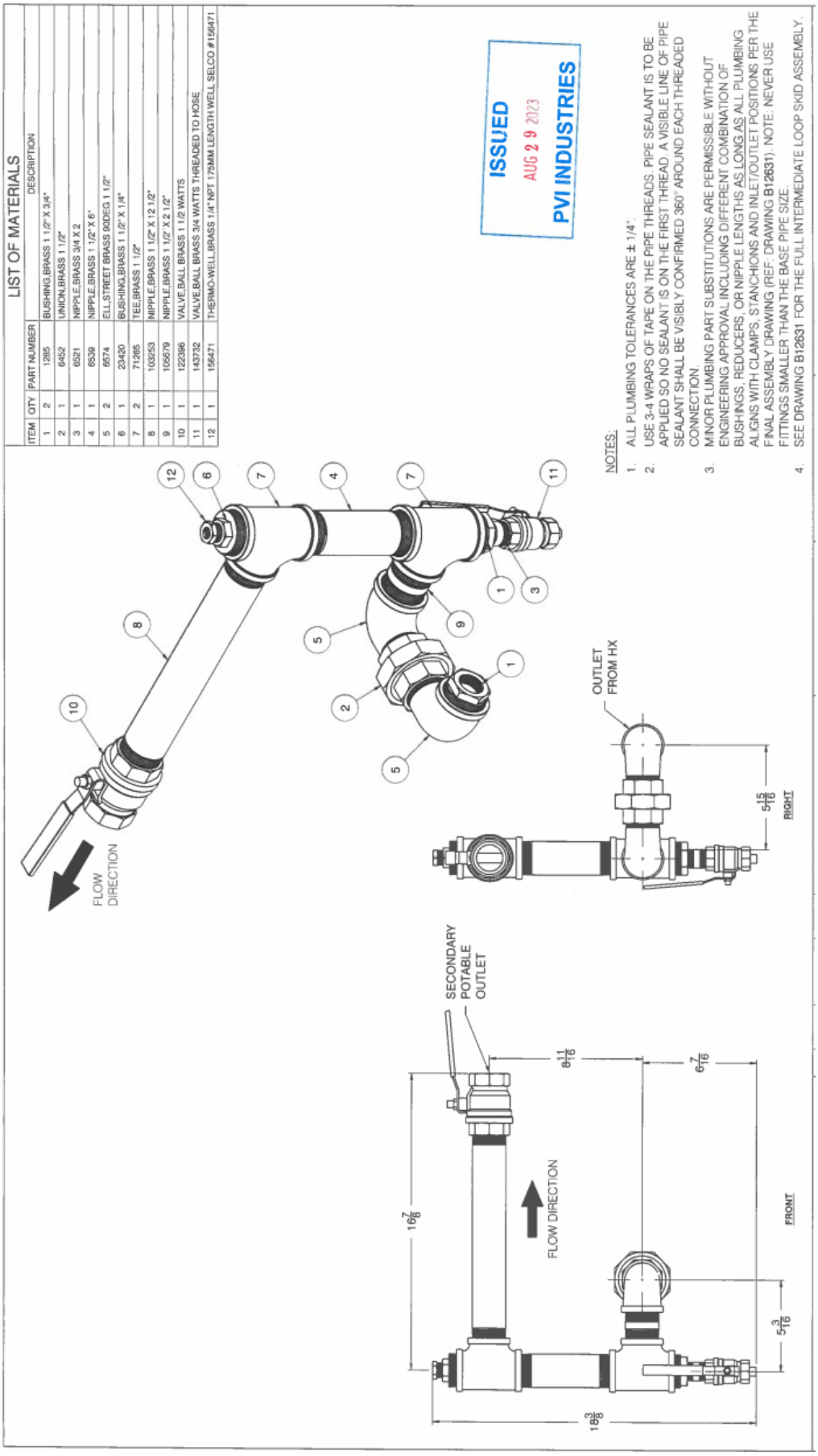
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1394	ELL,BRASS 90DEG 1 1/2"
2	2	1421	TEE,BRASS 3/4"
3	4	6521	NIPPLE,BRASS 3/4 X 2
4	1	6522	NIPPLE,BRASS 3/4" X 3"
5	1	6537	NIPPLE,BRASS 1 1/2" X 4"
6	1	6538	NIPPLE,BRASS 1 1/2" X 5"
7	1	6574	ELL,STREET BRASS 90DEG 1 1/2"
8	1	24150	NIPPLE,BRASS 3/4" X 4"
9	1	30146	NIPPLE,BRASS 3/4" X 6"
11	2	51022	UNION,BRASS 3/4"
12	2	51023	ELL,STREET BRASS 90DEG 3/4"
13	1	69244	ELL,BRASS 90DEG 3/4"
14	1	6533	NIPPLE,BRASS 1 1/2" X 2"
15	1	110433	NIPPLE,BRASS 3/4" X 5"
16	1	115484	NIPPLE,BRASS 1 1/2" X 4 1/2"
17	1	120219	ELL,BRASS 90DEG 1 1/2" X 3/4"
18	1	122396	VALVE,BALL BRASS 1 1/2 WATTS
19	1	125528	PUMP B&G 2-5 HP SERIES PL MODEL #PL-55
20	1	151599	VALVE,BALL BRASS 3/4 WATTS
22	1	156582	FLANGE,COMPANION BRONZE 1 1/2" NPT B&G #101211LF FOR ECOCIRC XL PUMP
23	1	156666	Y-STRAINER,1 1/2" WATTS #LF777SM1-20 THREADED
24	1	162589	ASSY,VALVE 1 1/2" BELIMO #B239+ARX120-SR 2-WAY NPT THREADED CONTROL VALVE
25	1	726	VALVE,PRESSURE RELIEF 3/4" WATTS 174A 100PSI
26	1	6539	NIPPLE,BRASS 1 1/2" X 6"
27	1	156411	FLANGE,ISOLATION-CHECK 1 1-2 NPT B&G #101245LF for PL55

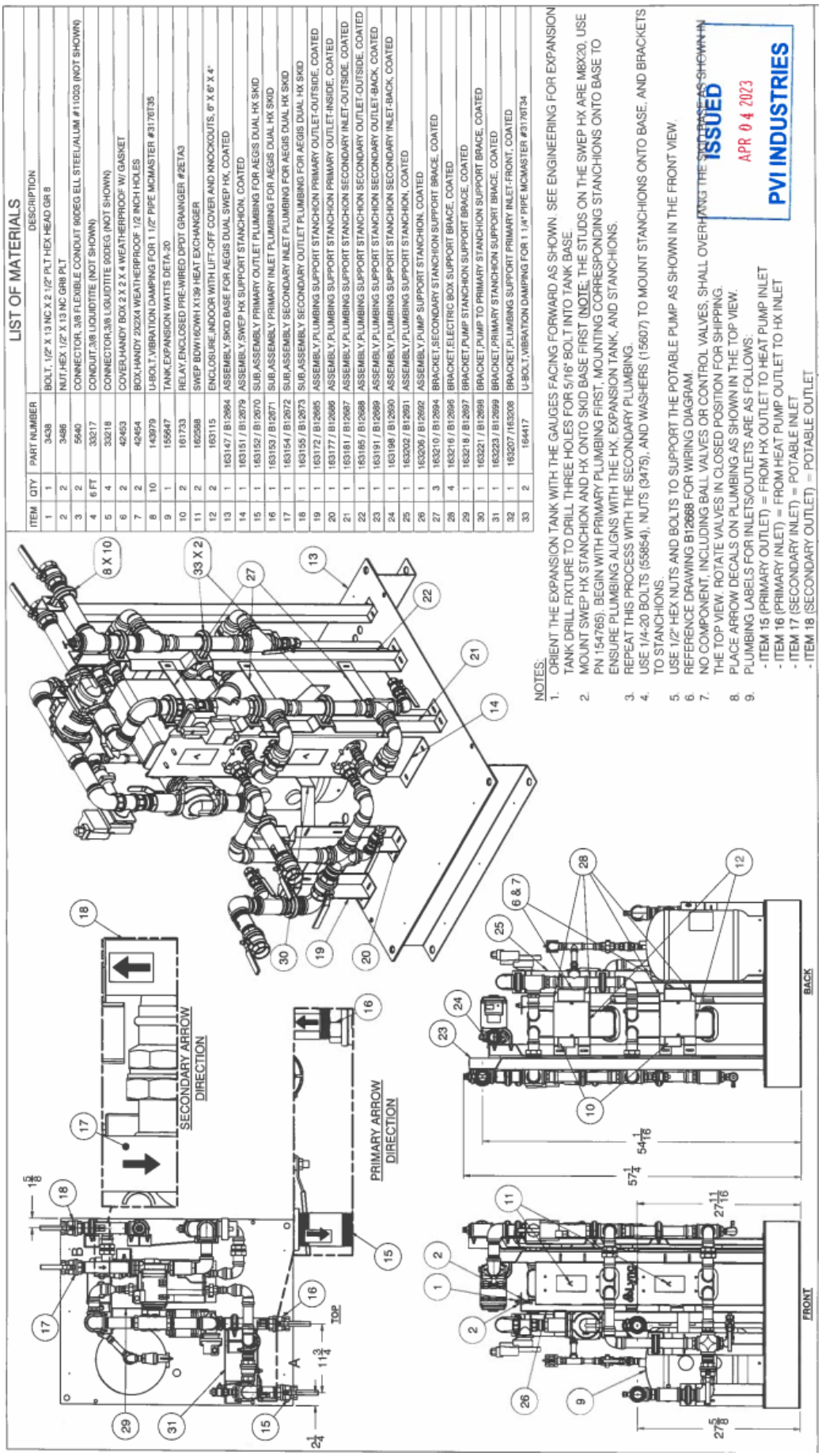
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
5. THERE ARE NO SUBSTITUTIONS AVAILABLE FOR 1 1/2" BELIMO #B239 + ARX120-SR 2-WAY CONTROL VALVE.
6. PUMP SHOWN FOR VOLUTE FLOW DIRECTION. REMOVE PUMP FROM VOLUTE AND ORIENTATE AS SHOWN WITH ELECTRICAL BOX ON TOP.

ISSUED OCT 2 0 2023 PVI INDUSTRIES


LIST OF MATERIALS
ITEM QTY PART NUMBER DESCRIPTION
1 3 1285 BUSHING,BRASS 1 1/2" X 3/4"
2 1 1394 ELL,BRASS 90DEG 1 1/2"
3 3 6521 NIPPLE,BRASS 3/4 X 2"
4 1 6537 NIPPLE,BRASS 1 1/2" X 4"
5 1 6574 ELL,STREET BRASS 90DEG 1 1/2"
6 1 51022 UNION,BRASS 3/4"
7 2 51023 ELL,STREET BRASS 90DEG 3/4"
8 2 71265 TEE,BRASS 1 1/2"
9 2 105679 NIPPLE,BRASS 1 1/2" X 2 1/2"
10 2 122896 VALVE,BALL BRASS 1 1/2 WATTS
11 2 143732 VALVE,BALL 3/4" WATTS #FLFFBV-3C-CC BRASS THREADED X HOSE
12 1 146005 NIPPLE,BRASS 1 1/2" X 5 1/2"
ISSUED
AUG 2 9 2023
PVI INDUSTRIES
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS, AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
FLOW DIRECTION
FLOW DIRECTION
OUTLET FROM HX
OUTLET TO HEAT PUMP
FRONT
RIGHT


LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 2 | 1285 | BUSHING,BRASS 1 1/2" X 3/4"
2 | 1 | 1394 | ELL,BRASS 90DEG 1 1/2"
3 | 1 | 6452 | UNION,BRASS 1 1/2"
4 | 1 | 6521 | NIPPLE,BRASS 3/4 X 2
5 | 1 | 6538 | NIPPLE,BRASS 1 1/2" X 5"
6 | 3 | 6574 | ELLSTREET BRASS 90DEG 1 1/2"
7 | 1 | 71265 | TEE,BRASS 1 1/2"
8 | 4 | 105679 | NIPPLE,BRASS 1 1/2" X 2 1/2"
9 | 1 | 116747 | NIPPLE,BRASS 1 1/2" X 9"
10 | 1 | 122396 | VALVE,BALL BRASS 1 1/2 WATTS
11 | 1 | 143732 | VALVE,BALL 3/4" WATTS #LFFBV-3C-CC BRASS THREADED X HOSE
12 | 1 | 156411 | FLANGE,ISOLATION/CHECK 1 1/2" NPT B&G #101245LF CHECK-TROL, LEAD FREE
13 | 1 | 156582 | FLANGE,COMPANION BRONZE 1 1/2" NPT B&G #10121LF FOR ECOCIRC XL PUMP
14 | 1 | 156696 | Y-STRAINER,1 1/2" WATTS #LF777SM1-20 THREADED
15 | 1 | 162069 | ASSY,VALVE 1 1/2" BELIMO #B239+ARX120-SR 2-WAY NPT THREADED CONTROL VALVE
16 | 1 | 162741 | PUMP B&G PL-36 LEAD-FREE #1BL003LF
17 | 1 | 51023 | ELLSTREET BRASS 90DEG 3/4"
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
5. THERE ARE NO SUBSTITUTIONS AVAILABLE FOR 1 1/2" BELIMO #B239+ARX120-SR 2-WAY CONTROL VALVE.
6. PUMP SHOWN FOR VOLUTE FLOW DIRECTION. REMOVE PUMP FROM VOLUTE AND ORIENTATE AS SHOWN WITH ELECTRICAL BOX ON TOP.
ISSUED
AUG 2 8 2023
PVI INDUSTRIES
FLOW DIRECTION
SECONDARY POTABLE INLET
FLOW DIRECTION
INLET TO HX
RIGHT
FRONT


LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 2 | 1285 | BUSHING,BRASS 1 1/2" X 3/4"
2 | 1 | 6452 | UNION,BRASS 1 1/2"
3 | 1 | 6521 | NIPPLE,BRASS 3/4 X 2
4 | 1 | 6539 | NIPPLE,BRASS 1 1/2" X 6"
5 | 2 | 6574 | ELL,STREET BRASS 90DEG 1 1/2"
6 | 1 | 23420 | BUSHING,BRASS 1 1/2" X 1/4"
7 | 2 | 71265 | TEE,BRASS 1 1/2"
8 | 1 | 103253 | NIPPLE,BRASS 1 1/2" X 12 1/2"
9 | 1 | 105679 | NIPPLE,BRASS 1 1/2" X 2 1/2"
10 | 1 | 122396 | VALVE,BALL BRASS 1 1/2 WATTS
11 | 1 | 143732 | VALVE,BALL BRASS 3/4 WATTS THREADED TO HOSE
12 | 1 | 156471 | THERMO-WELL,BRASS 1/4" NPT 175MM LENGTH WELL SELCO #156471
ISSUED
AUG 2 9 2023
PVI INDUSTRIES
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL, INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF. DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
FLOW DIRECTION
OUTLET FROM HX
5 15/16
RIGHT
SECONDARY POTABLE OUTLET
8 11/16
6 7/16
16 7/8
FLOW DIRECTION
FRONT
5 3/16
18 3/8

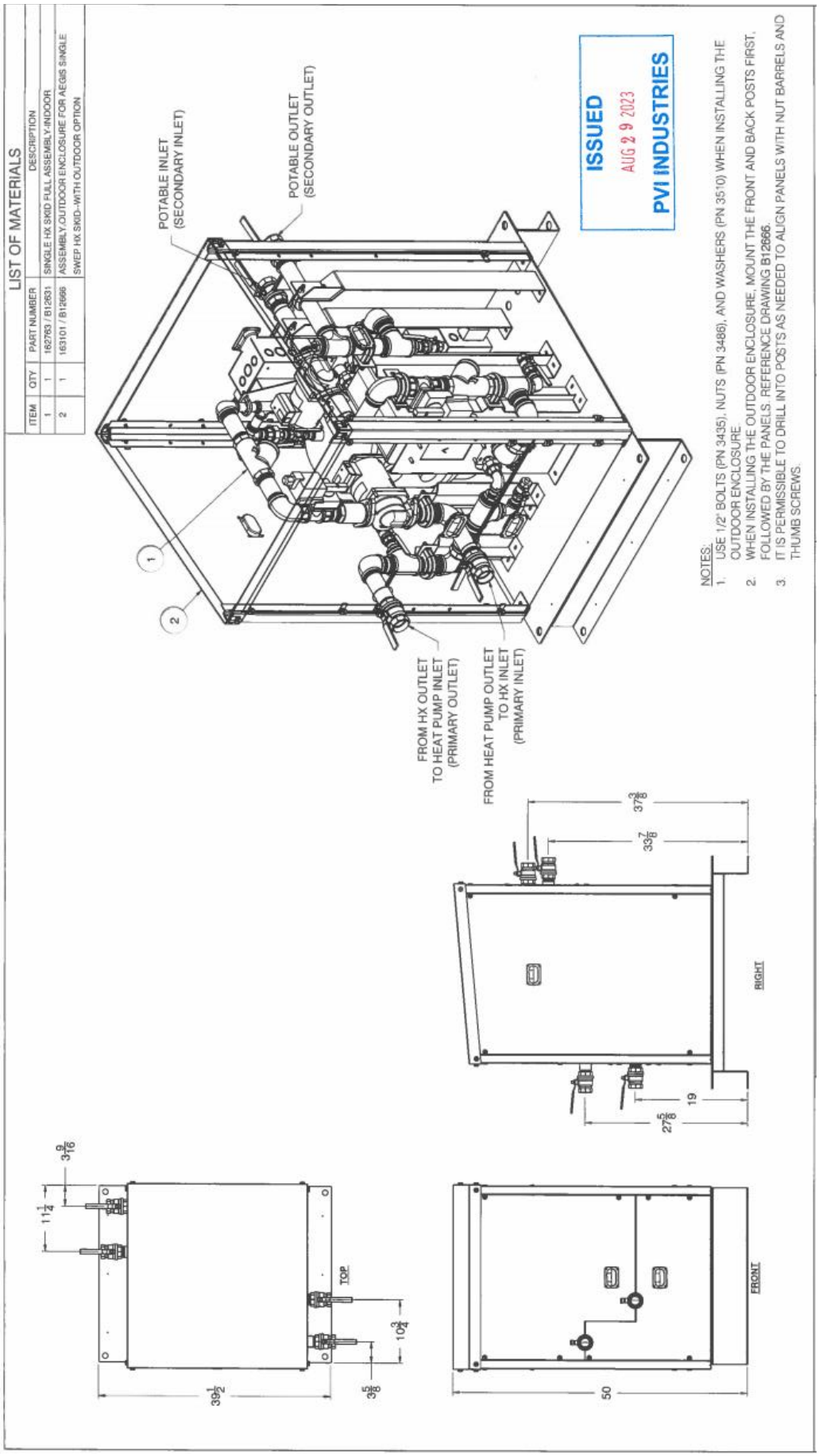


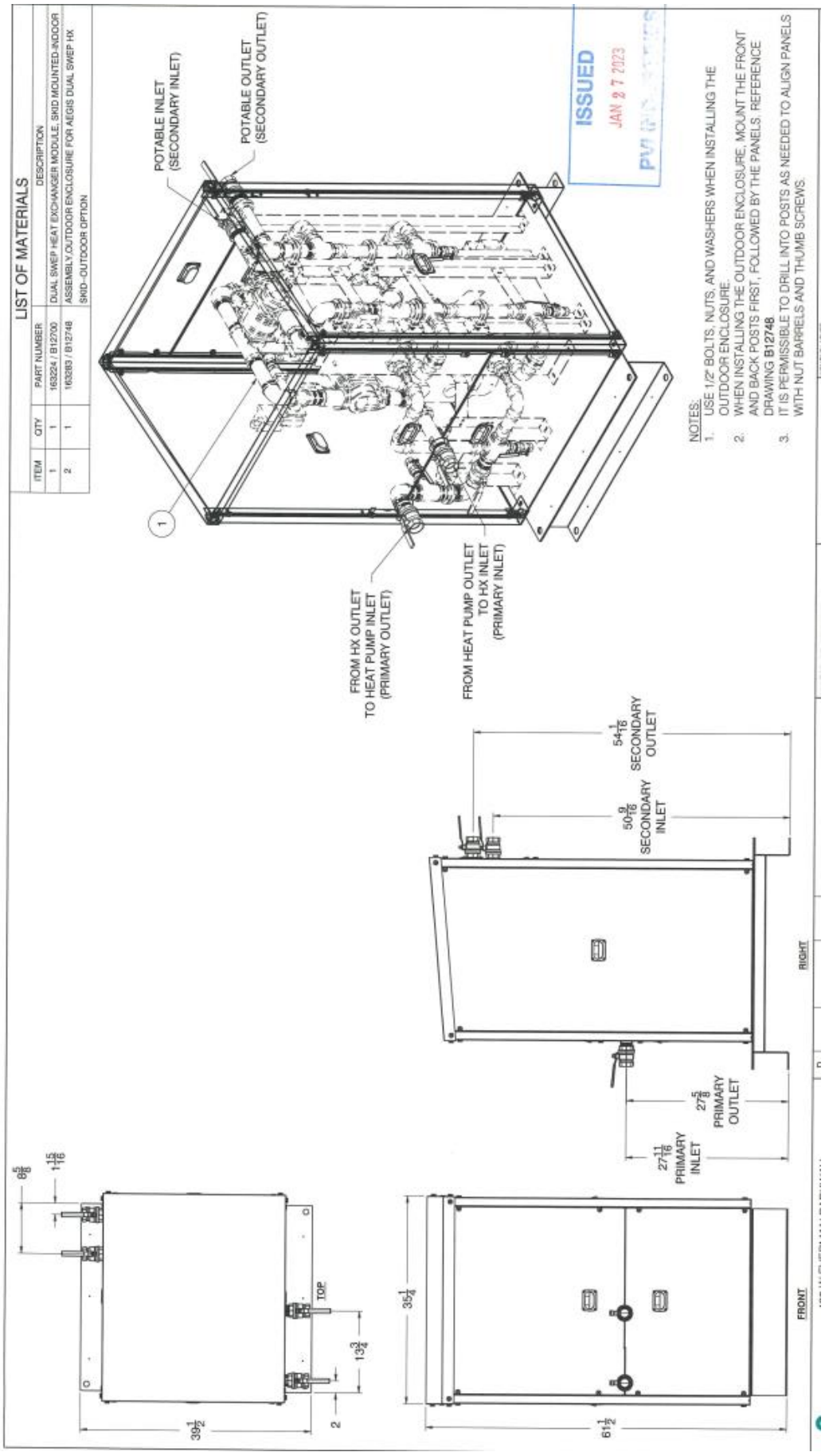
LIST OF MATERIALS

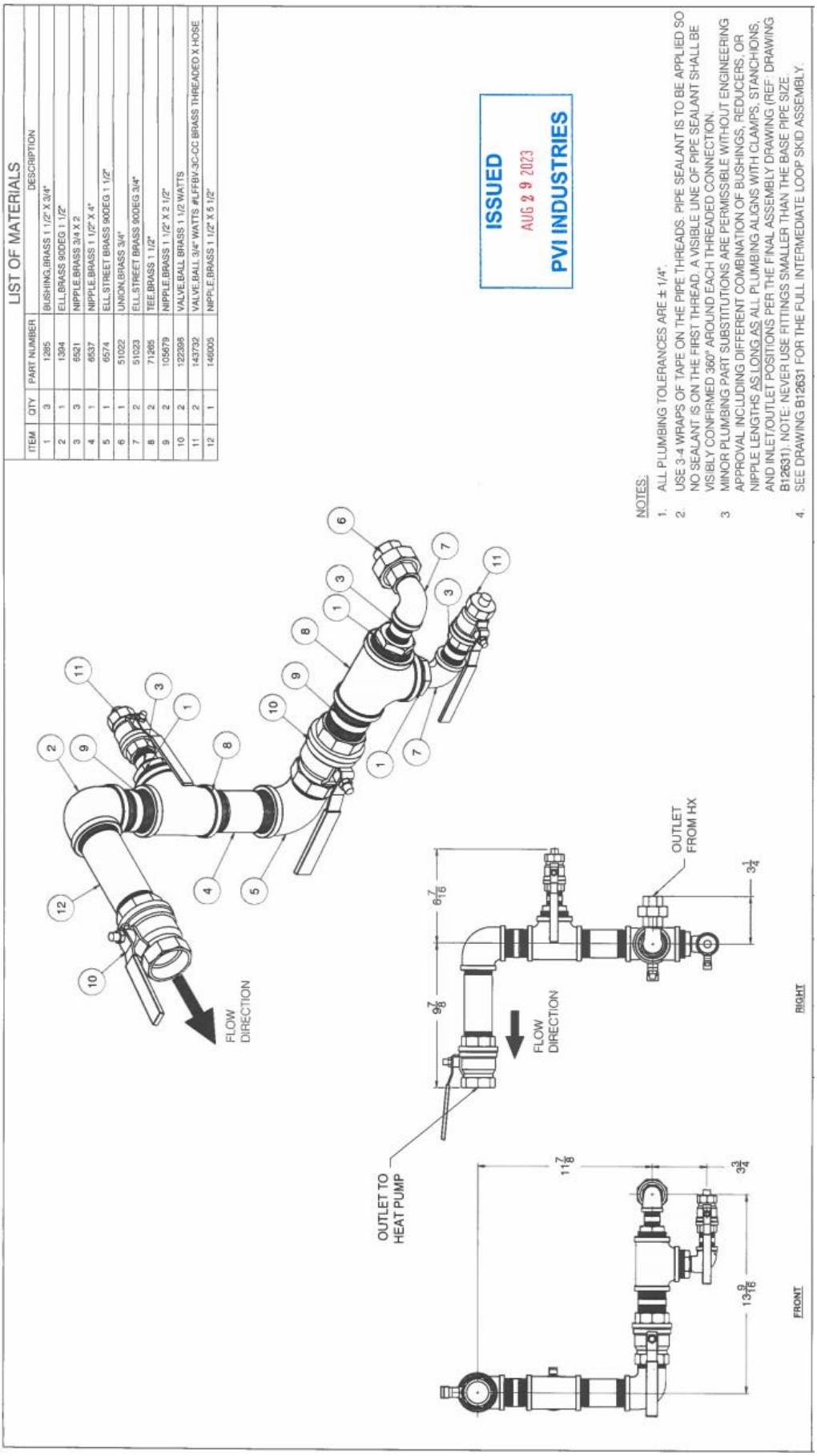
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3438	BOLT, 1/2" X 13 NC X 2 1/2" PLT HEX HEAD GR 8
2	2	3486	NUT,HEX 1/2" X 13 NC GR8 PLT
3	2	5640	CONNECTOR, 3/8 FLEXIBLE CONDUIT 90DEG ELL STEEL/ALUM #11003 (NOT SHOWN)
4	6 FT	33217	CONDUIT,3/8 LIQUIDTITE (NOT SHOWN)
5	4	33218	CONNECTOR,3/8 LIQUIDTITE 90DEG (NOT SHOWN)
6	2	42453	COVER,HANDY BOX 2 X 2 X 4 WEATHERPROOF W/ GASKET
7	2	42454	BOX,HANDY 2X2X4 WEATHERPROOF 1/2 INCH HOLES
8	10	143979	U-BOLT,VIBRATION DAMPING FOR 1 1/2" PIPE, MCMASTER #3176735
9	1	155647	TANK,EXPANSION WATTS DETA-20
10	2	161733	RELAY, ENCLOSED PRE-WIRED DPDT GRAINGER #2ETA3
11	2	162588	SWEP BDW16/20WH X139 HEAT EXCHANGER
12	2	163115	ENCLOSURE,INDOOR WITH LIFT-OFF COVER AND KNOCKOUTS, 6" X 6" X 4"
13	1	163147 / B12684	ASSEMBLY,SKID BASE FOR AEGIS DUAL SWEP HX, COATED
14	1	163151 / B12679	ASSEMBLY,SWEP HX SUPPORT STANCHION, COATED
15	1	163152 / B12670	SUB,ASSEMBLY PRIMARY OUTLET PLUMBING FOR AEGIS DUAL HX SKID
16	1	163153 / B12671	SUB,ASSEMBLY PRIMARY INLET PLUMBING FOR AEGIS DUAL HX SKID
17	1	163154 / B12672	SUB,ASSEMBLY SECONDARY INLET PLUMBING FOR AEGIS DUAL HX SKID
18	1	163155 / B12673	SUB,ASSEMBLY SECONDARY OUTLET PLUMBING FOR AEGIS DUAL HX SKID
19	1	163172 / B12685	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET-OUTSIDE, COATED
20	1	163177 / B12686	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET-INSIDE, COATED
21	1	163181 / B12687	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET-OUTSIDE, COATED
22	1	163185 / B12688	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET-OUTSIDE, COATED
23	1	163191 / B12689	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET-BACK, COATED
24	1	163198 / B12690	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET-BACK, COATED
25	1	163202 / B12691	ASSEMBLY,PLUMBING SUPPORT STANCHION, COATED
26	1	163206 / B12692	ASSEMBLY,PUMP SUPPORT STANCHION, COATED
27	3	163210 / B12694	BRACKET,SECONDARY STANCHION SUPPORT BRACE, COATED
28	4	163216 / B12696	BRACKET,ELECTRIC BOX SUPPORT BRACE, COATED
29	1	163218 / B12697	BRACKET,PUMP STANCHION SUPPORT BRACE, COATED
30	1	163221 / B12698	BRACKET,PUMP TO PRIMARY STANCHION SUPPORT BRACE, COATED
31	1	163223 / B12699	BRACKET,PRIMARY STANCHION SUPPORT BRACE, COATED
32	1	163207 / 163208	BRACKET,PLUMBING SUPPORT PRIMARY INLET-FRONT, COATED
33	2	164417	U-BOLT,VIBRATION DAMPING FOR 1 1/4" PIPE MCMASTER #3176734

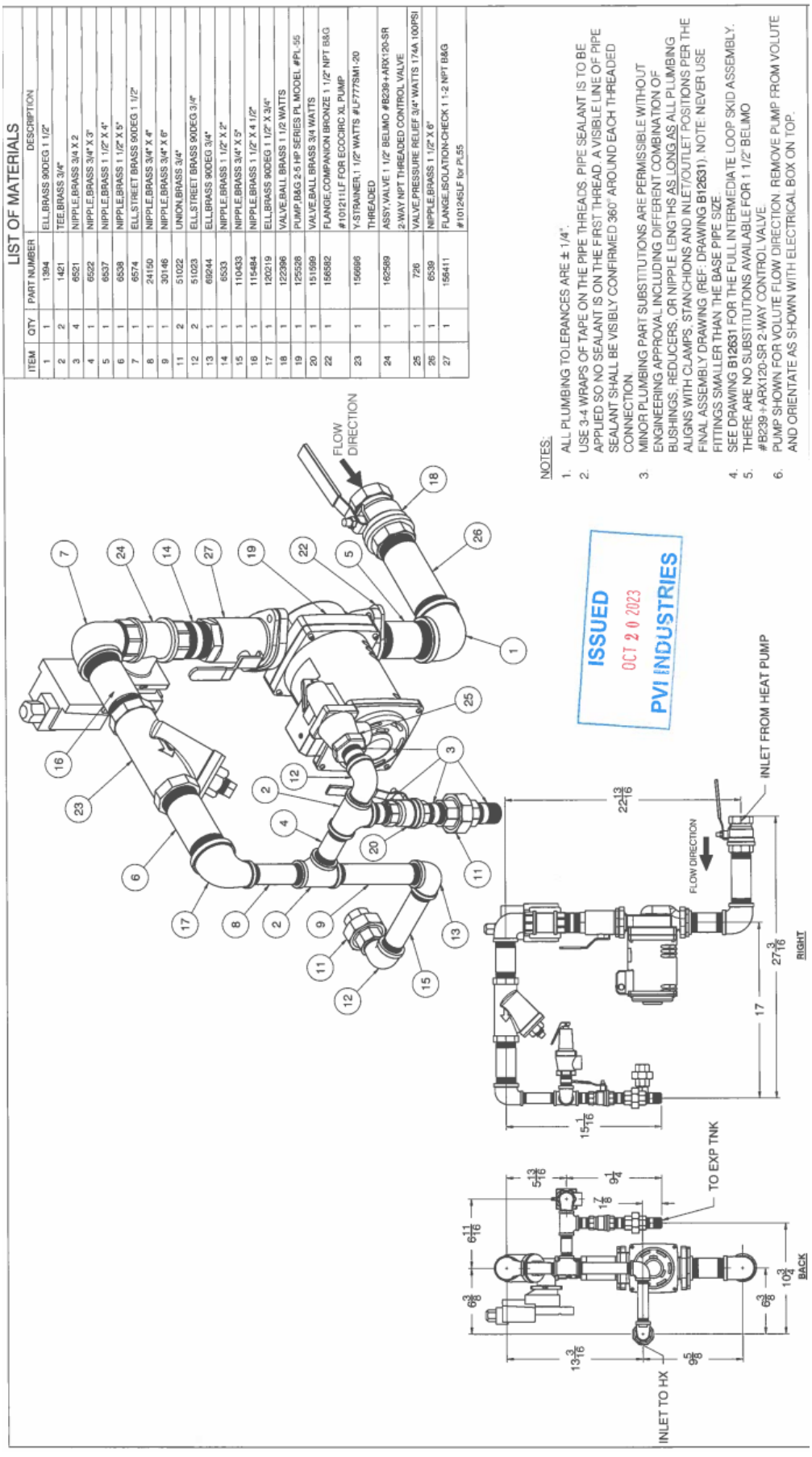
NOTES:
1. ORIENT THE EXPANSION TANK WITH THE GAUGES FACING FORWARD AS SHOWN. SEE ENGINEERING FOR EXPANSION TANK DRILL FIXTURE TO DRILL THREE HOLES FOR 5/16" BOLT INTO TANK BASE
2. MOUNT SWEP HX STANCHION AND HX ONTO SKID BASE FIRST (NOTE: THE STUDS ON THE SWEP HX ARE M8X30, USE PN 154765). BEGIN WITH PRIMARY PLUMBING FIRST, MOUNTING CORRESPONDING STANCHIONS ONTO BASE TO ENSURE PLUMBING ALIGNS WITH THE HX. EXPANSION TANK, AND STANCHIONS.
3. REPEAT THIS PROCESS WITH THE SECONDARY PLUMBING.
4. USE 1/4-20 BOLTS (55854), NUTS (3475), AND WASHERS (15607) TO MOUNT STANCHIONS ONTO BASE, AND BRACKETS TO STANCHIONS.
5. USE 1/2" HEX NUTS AND BOLTS TO SUPPORT THE POTABLE PUMP AS SHOWN IN THE FRONT VIEW.
6. REFERENCE DRAWING B12668 FOR WIRING DIAGRAM.
7. NO COMPONENT, INCLUDING BALL VALVES OR CONTROL VALVES, SHALL OVERHANG THE SKID BASE AS SHOWN IN THE TOP VIEW. ROTATE VALVES IN CLOSED POSITION FOR SHIPPING.
8. PLACE ARROW DECALS ON PLUMBING AS SHOWN IN THE TOP VIEW.
9. PLUMBING LABELS FOR INLETS/OUTLETS ARE AS FOLLOWS:
   - ITEM 15 (PRIMARY OUTLET) = FROM HX OUTLET TO HEAT PUMP INLET
   - ITEM 16 (PRIMARY INLET) = FROM HEAT PUMP OUTLET TO HX INLET
   - ITEM 17 (SECONDARY INLET) = POTABLE INLET
   - ITEM 18 (SECONDARY OUTLET) = POTABLE OUTLET

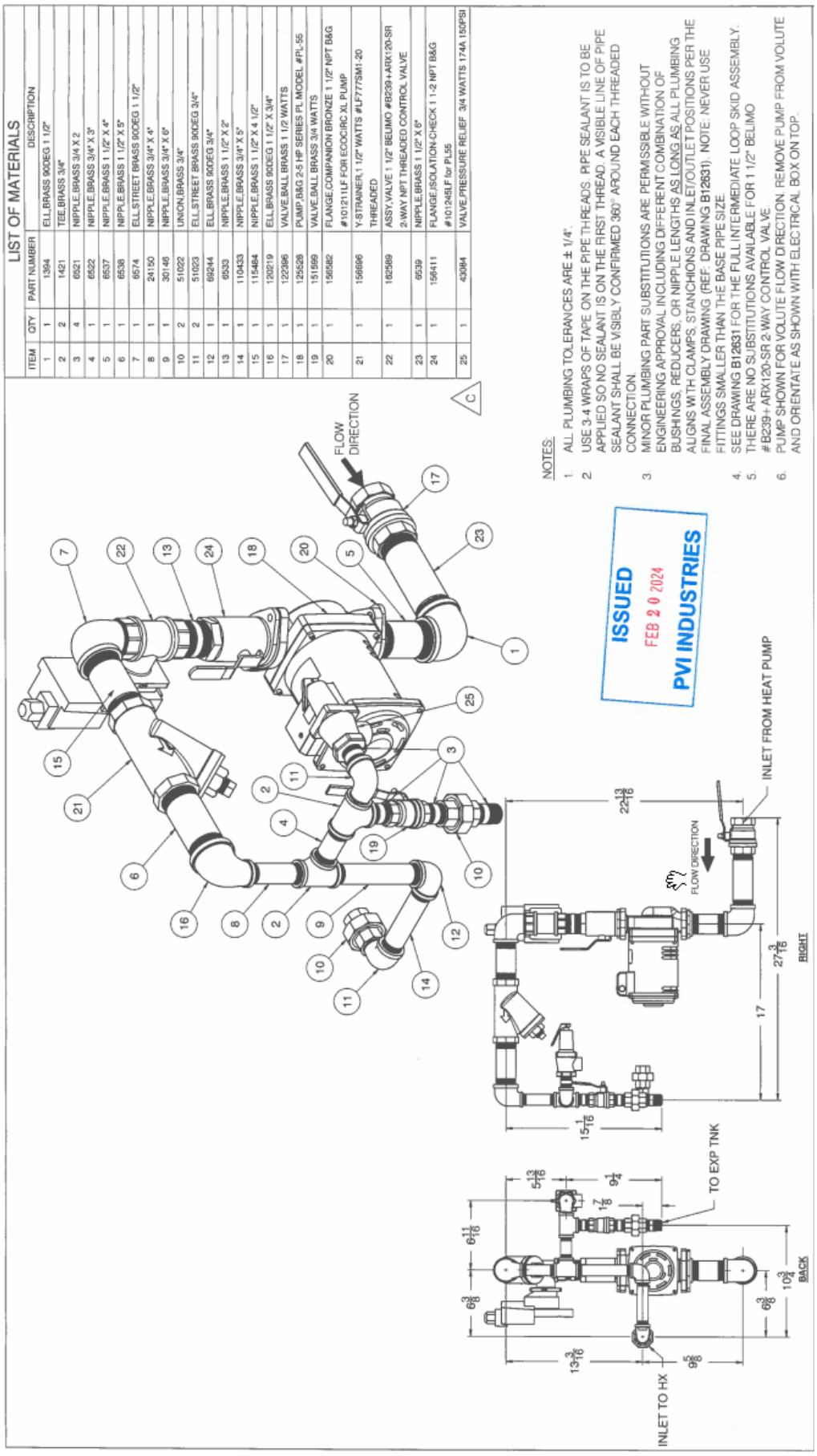
ISSUED
APR 04 2023
PVI INDUSTRIES

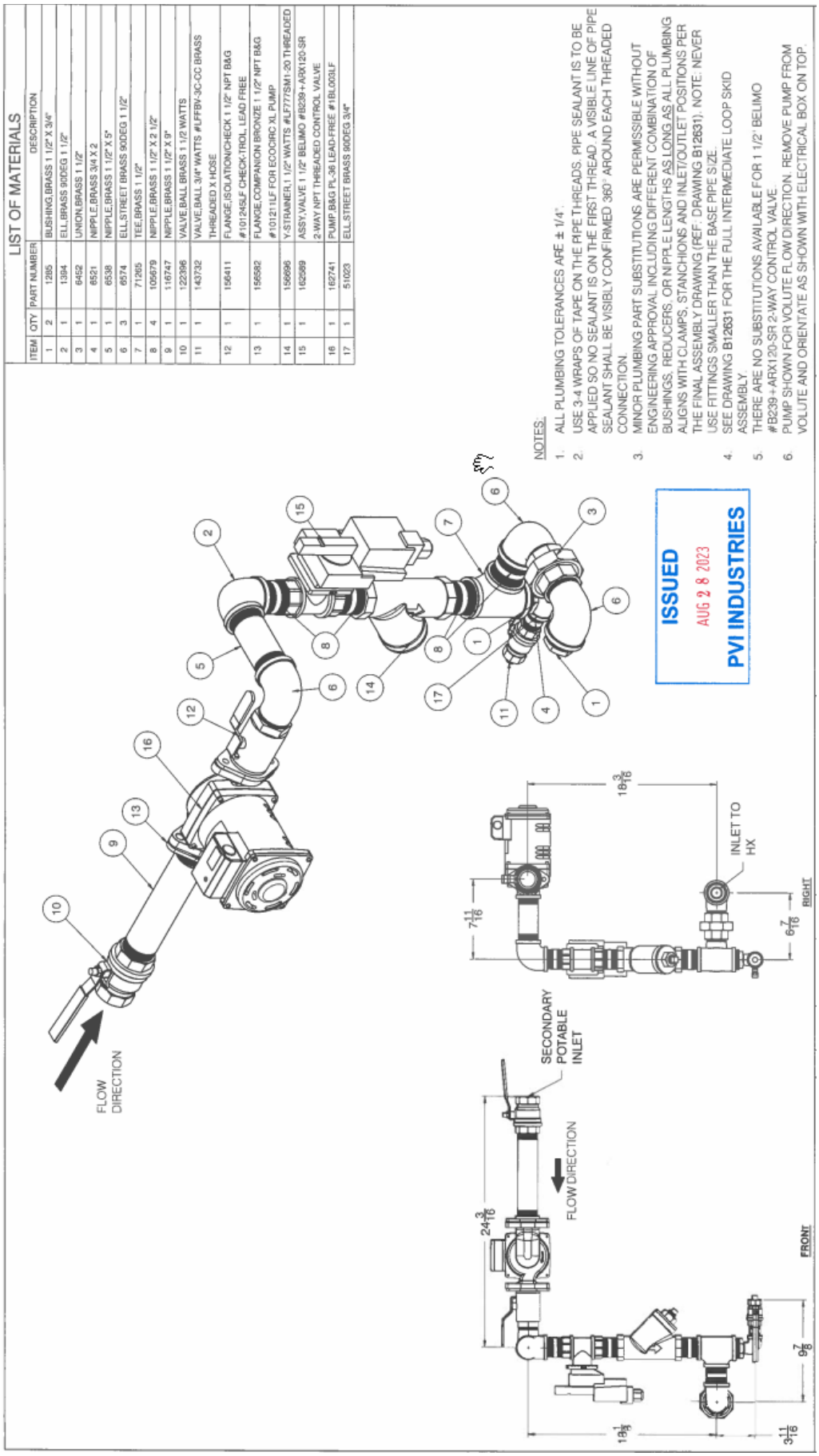

LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 1 | 162763 / B12631 | SINGLE HX SKID FULL ASSEMBLY-INDOOR
2 | 1 | 163101 / B12666 | ASSEMBLY,OUTDOOR ENCLOSURE FOR AEGIS SINGLE SWEP HX SKID--WITH OUTDOOR OPTION
POTABLE INLET (SECONDARY INLET)
POTABLE OUTLET (SECONDARY OUTLET)
ISSUED
AUG 29 2023
PVI INDUSTRIES
NOTES:
1. USE 1/2" BOLTS (PN 3435), NUTS (PN 3486), AND WASHERS (PN 3510) WHEN INSTALLING THE OUTDOOR ENCLOSURE.
2. WHEN INSTALLING THE OUTDOOR ENCLOSURE, MOUNT THE FRONT AND BACK POSTS FIRST, FOLLOWED BY THE PANELS. REFERENCE DRAWING B12666.
3. IT IS PERMISSIBLE TO DRILL INTO POSTS AS NEEDED TO ALIGN PANELS WITH NUT BARRELS AND THUMB SCREWS.
FROM HX OUTLET TO HEAT PUMP INLET (PRIMARY OUTLET)
FROM HEAT PUMP OUTLET TO HX INLET (PRIMARY INLET)
RIGHT
FRONT
TOP
50

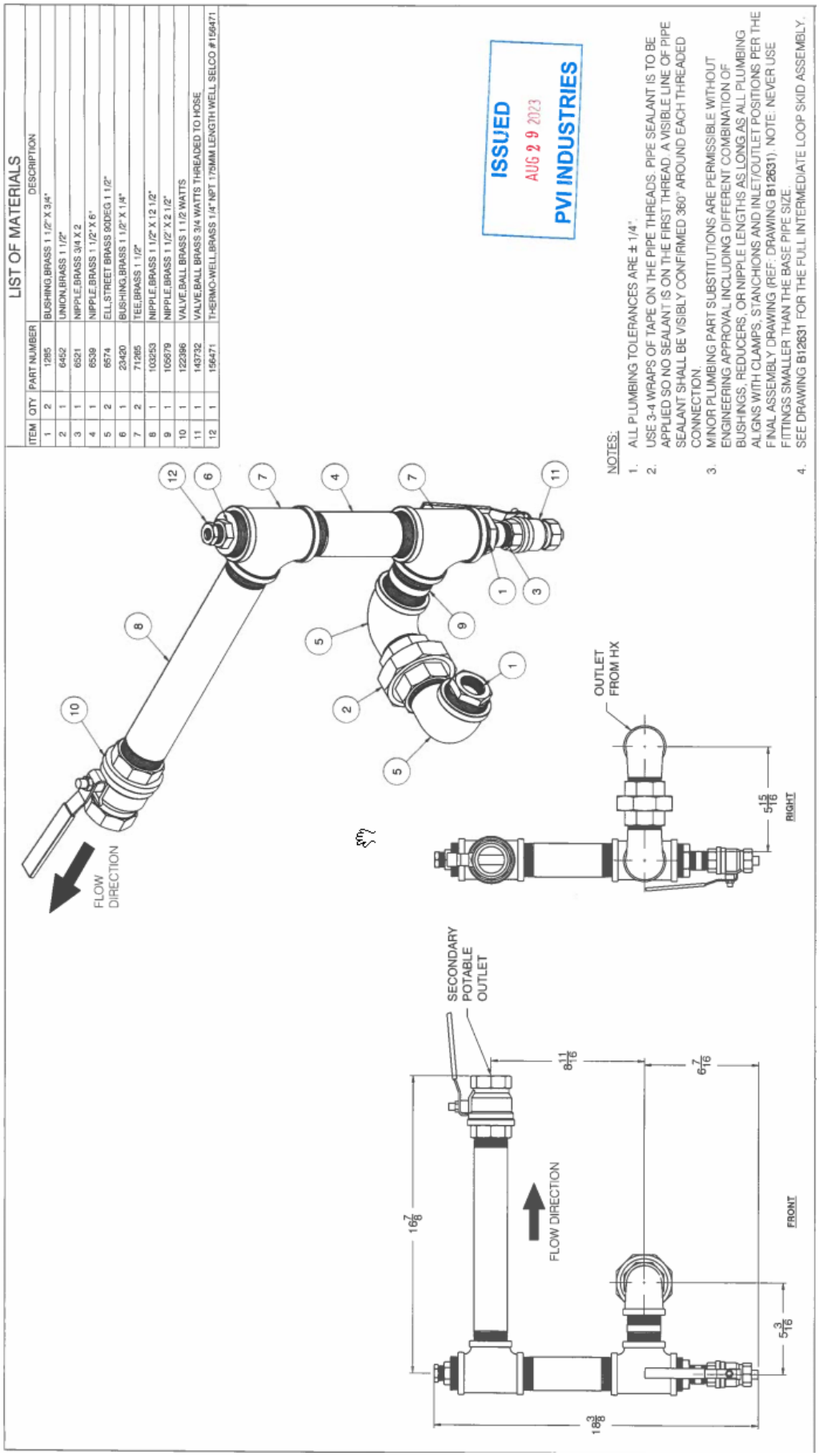

LIST OF MATERIALS
ITEM
QTY
PART NUMBER
DESCRIPTION
1
1
163224 / B12700
DUAL SWEP HEAT EXCHANGER MODULE, SKID MOUNTED-INDOOR
2
1
163283 / B12748
ASSEMBLY,OUTDOOR ENCLOSURE FOR AEGIS DUAL SWEP HX SKID–OUTDOOR OPTION
ISSUED
JAN 2 7 2023
NOTES:
1. USE 1/2" BOLTS, NUTS, AND WASHERS WHEN INSTALLING THE OUTDOOR ENCLOSURE.
2. WHEN INSTALLING THE OUTDOOR ENCLOSURE, MOUNT THE FRONT AND BACK POSTS FIRST, FOLLOWED BY THE PANELS. REFERENCE DRAWING B12748
3. IT IS PERMISSIBLE TO DRILL INTO POSTS AS NEEDED TO ALIGN PANELS WITH NUT BARRELS AND THUMB SCREWS.
POTABLE INLET (SECONDARY INLET)
POTABLE OUTLET (SECONDARY OUTLET)
FROM HX OUTLET TO HEAT PUMP INLET (PRIMARY OUTLET)
FROM HEAT PUMP OUTLET TO HX INLET (PRIMARY INLET)
SECONDARY OUTLET
SECONDARY INLET
PRIMARY OUTLET
PRIMARY INLET
RIGHT
FRONT
TOP


LIST OF MATERIALS
ITEM QTY PART NUMBER DESCRIPTION
1 3 1285 BUSHING,BRASS 1 1/2" X 3/4"
2 1 1394 ELL,BRASS 90DEG 1 1/2"
3 3 6521 NIPPLE,BRASS 3/4 X 2
4 1 6537 NIPPLE,BRASS 1 1/2" X 4"
5 1 6574 ELL,STREET BRASS 90DEG 1 1/2"
6 1 51022 UNION,BRASS 3/4"
7 2 51023 ELL,STREET BRASS 90DEG 3/4"
8 2 71265 TEE,BRASS 1 1/2"
9 2 105679 NIPPLE,BRASS 1 1/2" X 2 1/2"
10 2 122396 VALVE,BALL BRASS 1 1/2 WATTS
11 2 143732 VALVE,BALL 3/4" WATTS #LFFBV-3C-CC BRASS THREADED X HOSE
12 1 146005 NIPPLE,BRASS 1 1/2" X 5 1/2"
ISSUED
AUG 2 9 2023
PVI INDUSTRIES
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS, AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
FLOW DIRECTION
FLOW DIRECTION
OUTLET FROM HX
OUTLET TO HEAT PUMP
6 7/16
9/8
3 1/4
11 7/16
3 3/4
13 9/16
RIGHT
FRONT


LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 1 | 1394 | ELL,BRASS 90DEG 1 1/2"
2 | 2 | 1421 | TEE,BRASS 3/4"
3 | 4 | 6521 | NIPPLE,BRASS 3/4 X 2
4 | 1 | 6522 | NIPPLE,BRASS 3/4" X 3"
5 | 1 | 6537 | NIPPLE,BRASS 1 1/2" X 4"
6 | 1 | 6538 | NIPPLE,BRASS 1 1/2" X 5"
7 | 1 | 6574 | ELL,STREET BRASS 90DEG 1 1/2"
8 | 1 | 24150 | NIPPLE,BRASS 3/4" X 4"
9 | 1 | 30146 | NIPPLE,BRASS 3/4" X 6"
11 | 2 | 51022 | UNION,BRASS 3/4"
12 | 2 | 51023 | ELL,STREET BRASS 90DEG 3/4"
13 | 1 | 69244 | ELL,BRASS 90DEG 3/4"
14 | 1 | 6533 | NIPPLE,BRASS 1 1/2" X 2"
15 | 1 | 110433 | NIPPLE,BRASS 3/4" X 5"
16 | 1 | 115484 | NIPPLE,BRASS 1 1/2" X 4 1/2"
17 | 1 | 120219 | ELL,BRASS 90DEG 1 1/2" X 3/4"
18 | 1 | 122396 | VALVE,BALL BRASS 1 1/2 WATTS
19 | 1 | 125526 | PUMP,B&G 2-5 HP SERIES PL MODEL #PL-55
20 | 1 | 151599 | VALVE,BALL BRASS 3/4 WATTS
22 | 1 | 156582 | FLANGE,COMPANION BRONZE 1 1/2" NPT B&G #101211LF FOR ECOCIRC XL PUMP
23 | 1 | 156666 | Y-STRAINER,1 1/2" WATTS #LF777SM1-20 THREADED
24 | 1 | 162589 | ASSY,VALVE 1 1/2" BELIMO #B239+ARX120-SR 2-WAY NPT THREADED CONTROL VALVE
25 | 1 | 726 | VALVE,PRESSURE RELIEF 3/4" WATTS 174A 100PSI
26 | 1 | 6539 | NIPPLE,BRASS 1 1/2" X 6"
27 | 1 | 156411 | FLANGE,ISOLATION-CHECK 1 1-2 NPT B&G #101245LF for PL55
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
5. THERE ARE NO SUBSTITUTIONS AVAILABLE FOR 1 1/2" BELIMO #B239 + ARX120-SR 2-WAY CONTROL VALVE.
6. PUMP SHOWN FOR VOLUTE FLOW DIRECTION. REMOVE PUMP FROM VOLUTE AND ORIENTATE AS SHOWN WITH ELECTRICAL BOX ON TOP.
FLOW DIRECTION
ISSUED
OCT 20 2023
PVI INDUSTRIES
INLET FROM HEAT PUMP
FLOW DIRECTION
RIGHT
TO EXP TNK
BACK
INLET TO HX


LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 1 | 1384 | ELL,BRASS 90DEG 1 1/2"
2 | 2 | 1421 | TEE,BRASS 3/4"
3 | 4 | 6521 | NIPPLE,BRASS 3/4 X 2
4 | 1 | 6522 | NIPPLE,BRASS 3/4" X 3"
5 | 1 | 6537 | NIPPLE,BRASS 1 1/2" X 4"
6 | 1 | 6538 | NIPPLE,BRASS 1 1/2" X 5"
7 | 1 | 6574 | ELL,STREET BRASS 90DEG 1 1/2"
8 | 1 | 24150 | NIPPLE,BRASS 3/4" X 4"
9 | 1 | 30148 | NIPPLE,BRASS 3/4" X 6"
10 | 2 | 51022 | UNION,BRASS 3/4"
11 | 2 | 51023 | ELL,STREET BRASS 90DEG 3/4"
12 | 1 | 69244 | ELL,BRASS 90DEG 3/4"
13 | 1 | 6533 | NIPPLE,BRASS 1 1/2" X 2"
14 | 1 | 110433 | NIPPLE,BRASS 3/4" X 5"
15 | 1 | 115484 | NIPPLE,BRASS 1 1/2" X 4 1/2"
16 | 1 | 120219 | ELL,BRASS 90DEG 1 1/2" X 3/4"
17 | 1 | 122886 | VALVE,BALL BRASS 1 1/2 WATTS
18 | 1 | 125626 | PUMP,B&G 2-5 HP SERIES PL MODEL #PL-55
19 | 1 | 151599 | VALVE,BALL BRASS 3/4 WATTS
20 | 1 | 156582 | FLANGE,COMPANION BRONZE 1 1/2" NPT B&G #101211LF FOR EQCIRC XL PUMP
21 | 1 | 156696 | Y-STRAINER,1 1/2" WATTS #LF777SM1-20 THREADED
22 | 1 | 162589 | ASSY,VALVE 1 1/2" BELIMO #B239+ARX120-SR 2-WAY NPT THREADED CONTROL VALVE
23 | 1 | 6539 | NIPPLE,BRASS 1 1/2" X 6"
24 | 1 | 156411 | FLANGE,ISOLATION CHECK 1 1-2 NPT B&G #101245LF for PL55
25 | 1 | 43084 | VALVE,PRESSURE RELIEF 3/4 WATTS 174A 150PSI
C
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF. DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
5. THERE ARE NO SUBSTITUTIONS AVAILABLE FOR 1 1/2" BELIMO #B239+ARX120-SR 2 WAY CONTROL VALVE.
6. PUMP SHOWN FOR VOLUTE FLOW DIRECTION. REMOVE PUMP FROM VOLUTE AND ORIENTATE AS SHOWN WITH ELECTRICAL BOX ON TOP.
ISSUED
FEB 20 2024
PVI INDUSTRIES
FLOW DIRECTION
INLET FROM HEAT PUMP
TO EXP TNK
INLET TO HX
RIGHT
BACK


LIST OF MATERIALS
ITEM QTY PART NUMBER DESCRIPTION
1 2 1285 BUSHING,BRASS 1 1/2" X 3/4"
2 1 1394 ELL,BRASS 90DEG 1 1/2"
3 1 6452 UNION,BRASS 1 1/2"
4 1 6521 NIPPLE,BRASS 3/4 X 2
5 1 6538 NIPPLE,BRASS 1 1/2" X 5"
6 3 6574 ELL,STREET BRASS 90DEG 1 1/2"
7 1 71265 TEE,BRASS 1 1/2"
8 4 105679 NIPPLE,BRASS 1 1/2" X 2 1/2"
9 1 116747 NIPPLE,BRASS 1 1/2" X 9"
10 1 122396 VALVE,BALL BRASS 1 1/2 WATTS
11 1 143732 VALVE,BALL 3/4" WATTS #LFFBV-3C-CC BRASS THREADED X HOSE
12 1 156411 FLANGE,ISOLATION/CHECK 1 1/2" NPT B&G #101245LF CHECK-TROL, LEAD FREE
13 1 156582 FLANGE,COMPANION BRONZE 1 1/2" NPT B&G #101211LF FOR ECOCIRC XL PUMP
14 1 156696 Y-STRAINER,1 1/2" WATTS #LF777SM1-20 THREADED
15 1 162089 ASSY,VALVE 1 1/2" BELIMO #B239+ARX120-SR 2-WAY NPT THREADED CONTROL VALVE
16 1 162741 PUMP,B&G PL-36 LEAD-FREE #1BL003LF
17 1 51023 ELL,STREET BRASS 90DEG 3/4"
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
3. MINOR PLUMBING PART SUBSTITUTIONS ARE PERMISSIBLE WITHOUT ENGINEERING APPROVAL INCLUDING DIFFERENT COMBINATION OF BUSHINGS, REDUCERS, OR NIPPLE LENGTHS AS LONG AS ALL PLUMBING ALIGNS WITH CLAMPS, STANCHIONS AND INLET/OUTLET POSITIONS PER THE FINAL ASSEMBLY DRAWING (REF: DRAWING B12631). NOTE: NEVER USE FITTINGS SMALLER THAN THE BASE PIPE SIZE.
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
5. THERE ARE NO SUBSTITUTIONS AVAILABLE FOR 1 1/2" BELIMO #B239+ARX120-SR 2-WAY CONTROL VALVE.
6. PUMP SHOWN FOR VOLUTE FLOW DIRECTION. REMOVE PUMP FROM VOLUTE AND ORIENTATE AS SHOWN WITH ELECTRICAL BOX ON TOP.
ISSUED
AUG 2 8 2023
PVI INDUSTRIES
FLOW DIRECTION
SECONDARY POTABLE INLET
FLOW DIRECTION
INLET TO HX
RIGHT
FRONT


LIST OF MATERIALS
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 2 | 1285 | BUSHING,BRASS 1 1/2" X 3/4"
2 | 1 | 6452 | UNION,BRASS 1 1/2"
3 | 1 | 6521 | NIPPLE,BRASS 3/4 X 2
4 | 1 | 6539 | NIPPLE,BRASS 1 1/2" X 6"
5 | 2 | 6574 | ELL,STREET BRASS 90DEG 1 1/2"
6 | 1 | 23420 | BUSHING,BRASS 1 1/2" X 1/4"
7 | 2 | 71265 | TEE,BRASS 1 1/2"
8 | 1 | 103253 | NIPPLE,BRASS 1 1/2" X 12 1/2"
9 | 1 | 105679 | NIPPLE,BRASS 1 1/2" X 2 1/2"
10 | 1 | 122396 | VALVE,BALL BRASS 1 1/2 WATTS
11 | 1 | 143732 | VALVE,BALL BRASS 3/4 WATTS THREADED TO HOSE
12 | 1 | 156471 | THERMO-WELL,BRASS 1/4" NPT 175MM LENGTH WELL SELCO #156471
ISSUED
AUG 2 9 2023
PVI INDUSTRIES
NOTES:
1. ALL PLUMBING TOLERANCES ARE ± 1/4".
2. USE 3-4 WRAPS OF TAPE ON THE PIPE THREADS. PIPE SEALANT IS TO BE APPLIED SO NO SEALANT IS ON THE FIRST THREAD. A VISIBLE LINE OF PIPE SEALANT SHALL BE VISIBLY CONFIRMED 360° AROUND EACH THREADED CONNECTION.
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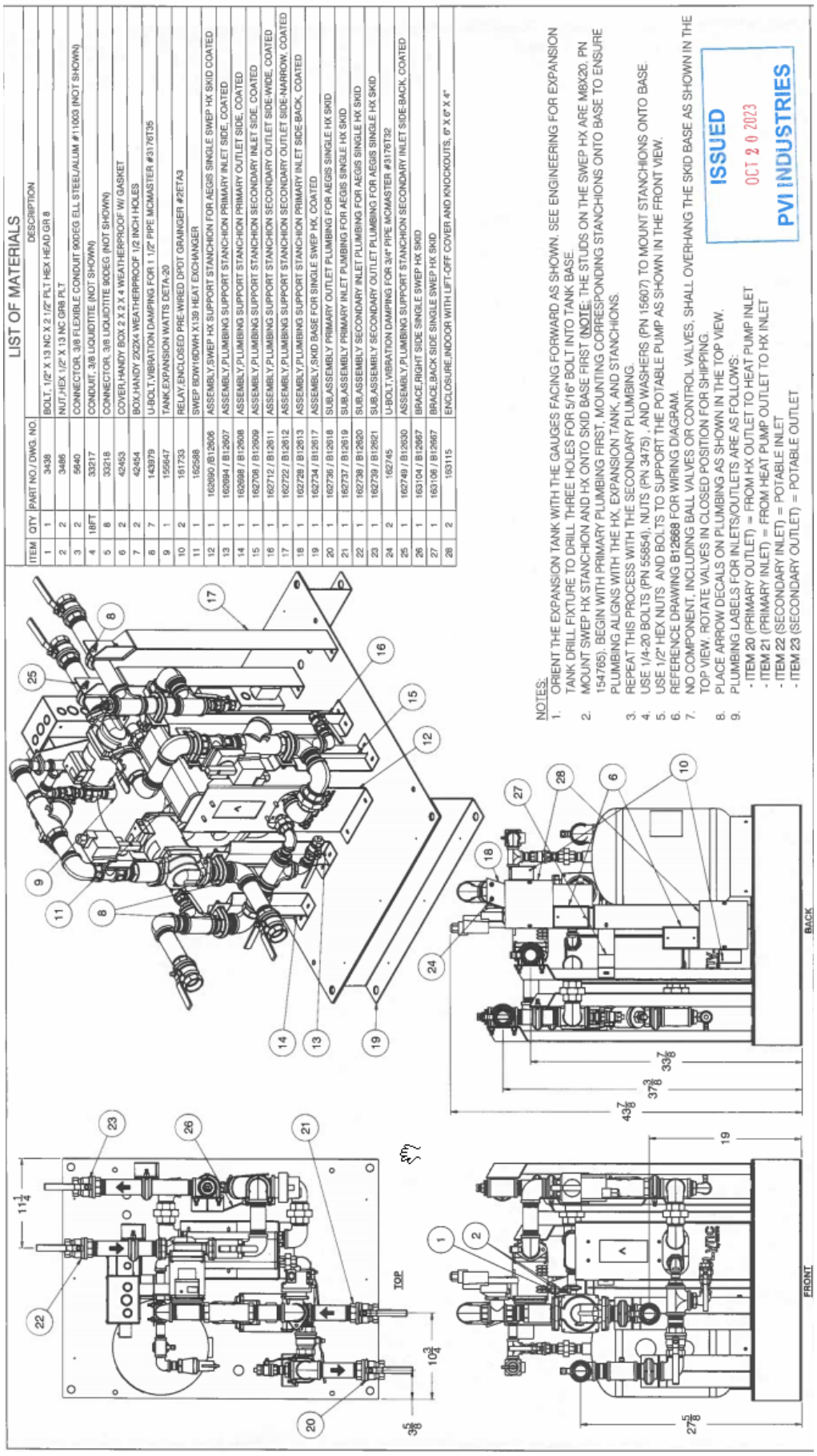
4. SEE DRAWING B12631 FOR THE FULL INTERMEDIATE LOOP SKID ASSEMBLY.
FLOW DIRECTION
OUTLET FROM HX
RIGHT
SECONDARY POTABLE OUTLET
FLOW DIRECTION
FRONT



LIST OF MATERIALS

ITEM	QTY	PART NO./ DWG. NO.	DESCRIPTION
1	1	3438	BOLT, 1/2" X 13 NC X 2 1/2" PLT HEX HEAD GR 8
2	2	3486	NUT,HEX 1/2" X 13 NC GR8 PLT
3	2	5640	CONNECTOR, 3/8 FLEXIBLE CONDUIT 90DEG ELL STEEL/ALUM #11003 (NOT SHOWN)
4	18FT	33217	CONDUIT, 3/8 LIQUIDTITE (NOT SHOWN)
5	8	33218	CONNECTOR, 3/8 LIQUIDTITE 90DEG (NOT SHOWN)
6	2	42453	COVER,HANDY BOX 2 X 2 X 4 WEATHERPROOF W/ GASKET
7	2	42454	BOX,HANDY 2X2X4 WEATHERPROOF 1/2 INCH HOLES
8	7	143979	U-BOLT,VIBRATION DAMPING FOR 1 1/2" PIPE MCMASTER #3176T36
9	1	155647	TANK,EXPANSION WATTS DETA-20
10	2	161733	RELAY,ENCLOSED PRE-WIRED DPDT GRAINGER #2ETA3
11	1	162588	SWEP BDW16DWH X139 HEAT EXCHANGER
12	1	162690 /B12606	ASSEMBLY,SWEP HX SUPPORT STANCHION FOR AEGIS SINGLE SWEP HX SKID COATED
13	1	162694 / B12607	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE, COATED
14	1	162698 / B12608	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET SIDE, COATED
15	1	162709 / B12609	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE, COATED
16	1	162712 / B12611	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-WIDE, COATED
17	1	162722 / B12612	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-NARROW, COATED
18	1	162729 / B12613	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE-BACK, COATED
19	1	162734 / B12617	ASSEMBLY,SKID BASE FOR SINGLE SWEP HX, COATED
20	1	162736 / B12618	SUB,ASSEMBLY PRIMARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
21	1	162737 / B12619	SUB,ASSEMBLY PRIMARY INLET PUMBING FOR AEGIS SINGLE HX SKID
22	1	162738 / B12620	SUB,ASSEMBLY SECONDARY INLET PLUMBING FOR AEGIS SINGLE HX SKID
23	1	162739 / B12621	SUB,ASSEMBLY SECONDARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
24	2	162745	U-BOLT,VIBRATION DAMPING FOR 3/4" PIPE MCMASTER #3176T32
25	1	162749 / B12630	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE-BACK, COATED
26	1	163104 / B12667	BRACE,RIGHT SIDE SINGLE SWEP HX SKID
27	1	163106 / B12667	BRACE,BACK SIDE SINGLE SWEP HX SKID
28	2	163115	ENCLOSURE,INDOOR WITH LIFT-OFF COVER AND KNOCKOUTS, 6" X 6" X 4"

NOTES:
1. ORIENT THE EXPANSION TANK WITH THE GAUGES FACING FORWARD AS SHOWN. SEE ENGINEERING FOR EXPANSION TANK DRILL FIXTURE TO DRILL THREE HOLES FOR 5/16" BOLT INTO TANK BASE.
2. MOUNT SWEP HX STANCHION AND HX ONTO SKID BASE FIRST (NOTE: THE STUDS ON THE SWEP HX ARE M8X20, PN 154765). BEGIN WITH PRIMARY PLUMBING FIRST, MOUNTING CORRESPONDING STANCHIONS ONTO BASE TO ENSURE PLUMBING ALIGNS WITH THE HX, EXPANSION TANK, AND STANCHIONS.
3. REPEAT THIS PROCESS WITH THE SECONDARY PLUMBING.
4. USE 1/4-20 BOLTS (PN 55854), NUTS (PN 3475) , AND WASHERS (PN 15607) TO MOUNT STANCHIONS ONTO BASE
5. USE 1/2" HEX NUTS AND BOLTS TO SUPPORT THE POTABLE PUMP AS SHOWN IN THE FRONT VIEW.
6. REFERENCE DRAWING B12668 FOR WIRING DIAGRAM.
7. NO COMPONENT, INCLUDING BALL VALVES OR CONTROL VALVES, SHALL OVERHANG THE SKID BASE AS SHOWN IN THE TOP VIEW. ROTATE VALVES IN CLOSED POSITION FOR SHIPPING.
8. PLACE ARROW DECALS ON PLUMBING AS SHOWN IN THE TOP VIEW.
9. PLUMBING LABELS FOR INLETS/OUTLETS ARE AS FOLLOWS:
   - ITEM 20 (PRIMARY OUTLET) = FROM HX OUTLET TO HEAT PUMP INLET
   - ITEM 21 (PRIMARY INLET) = FROM HEAT PUMP OUTLET TO HX INLET
   - ITEM 22 (SECONDARY INLET) = POTABLE INLET
   - ITEM 23 (SECONDARY OUTLET) = POTABLE OUTLET

ISSUED
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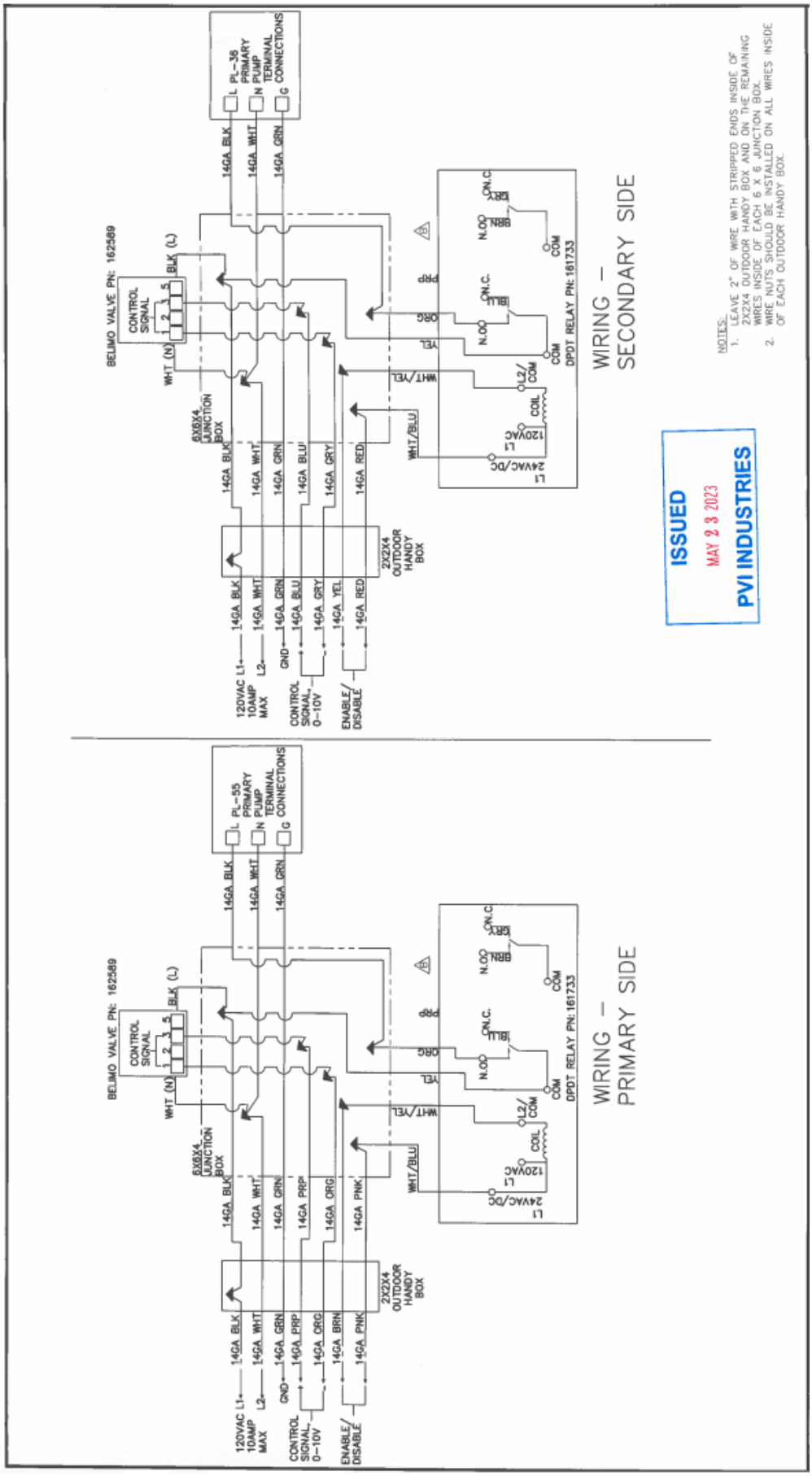
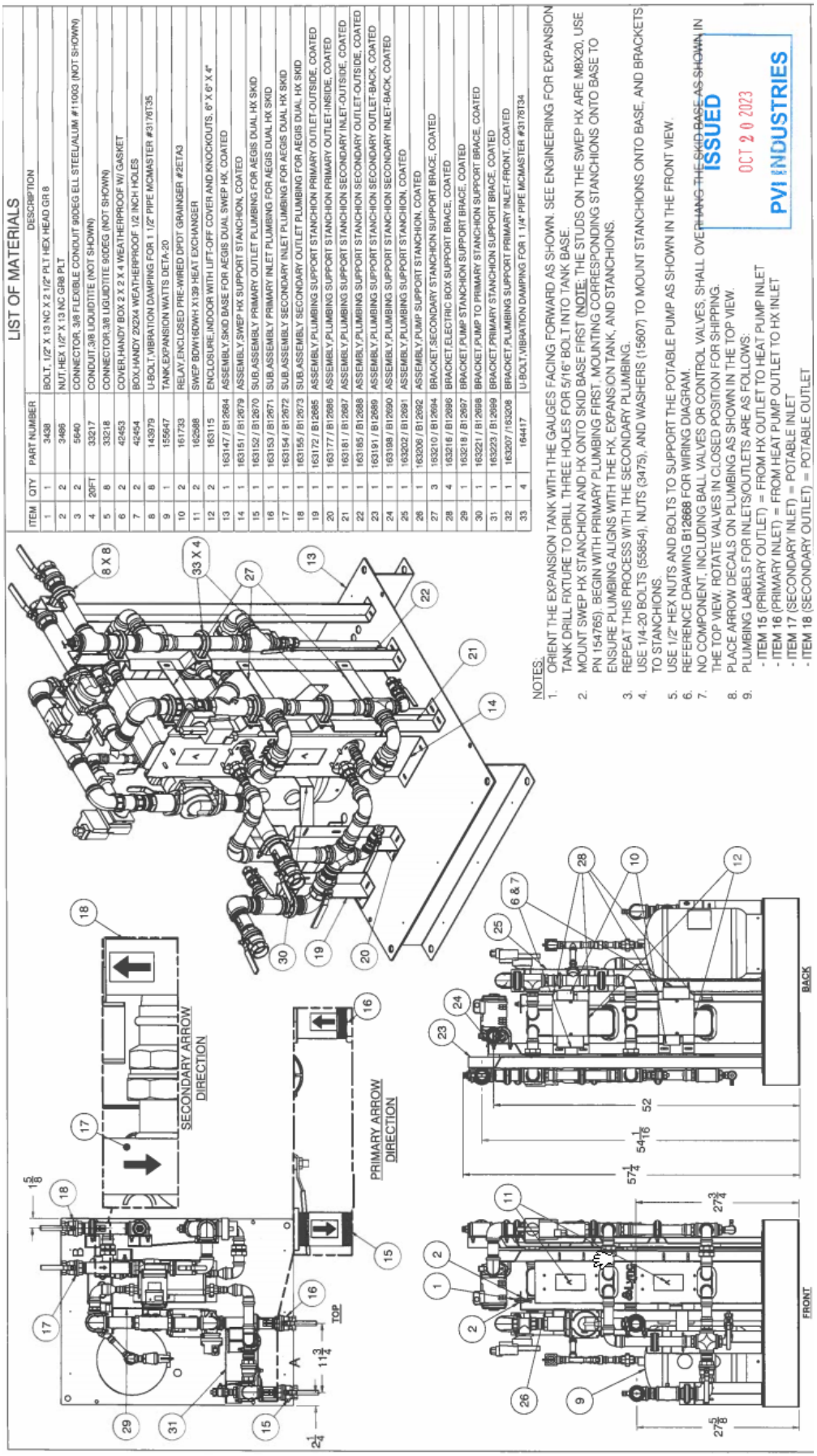
PVI INDUSTRIES


WIRING – SECONDARY SIDE
WIRING – PRIMARY SIDE
BELIMO VALVE PN: 162589
CONTROL SIGNAL
WHT (N)
BLK (L)
6X6X4 JUNCTION BOX
2X2X4 OUTDOOR HANDY BOX
PL-36 PRIMARY PUMP TERMINAL CONNECTIONS
PL-55 PRIMARY PUMP TERMINAL CONNECTIONS
DPDT RELAY PN: 161733
COIL
120VAC
24VAC/DC
14GA BLK
14GA WHT
14GA GRN
14GA BLU
14GA GRY
14GA YEL
14GA RED
14GA PRP
14GA ORG
14GA BRN
14GA PNK
120VAC L1 10AMP MAX
CONTROL SIGNAL 0-10V
ENABLE/ DISABLE
NOTES:
1. LEAVE 2" OF WIRE WITH STRIPPED ENDS INSIDE OF 2X2X4 OUTDOOR HANDY BOX AND ON THE REMAINING WIRES INSIDE OF EACH 6 X 6 JUNCTION BOX.
2. WIRE NUTS SHOULD BE INSTALLED ON ALL WIRES INSIDE OF EACH OUTDOOR HANDY BOX.
ISSUED
MAY 2 3 2023
PVI INDUSTRIES



LIST OF MATERIALS

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3438	BOLT, 1/2" X 13 NC X 2 1/2" PLT HEX HEAD GR 8
2	2	3486	NUT,HEX 1/2" X 13 NC GR8 PLT
3	2	5640	CONNECTOR, 3/8 FLEXIBLE CONDUIT 90DEG ELL STEEL/ALUM #11003 (NOT SHOWN)
4	20FT	33217	CONDUIT,3/8 LIQUIDTITE (NOT SHOWN)
5	8	33218	CONNECTOR,3/8 LIQUIDTITE 90DEG (NOT SHOWN)
6	2	42453	COVER,HANDY BOX 2 X 2 X 4 WEATHERPROOF W/ GASKET
7	2	42454	BOX,HANDY 2X2X4 WEATHERPROOF 1/2 INCH HOLES
8	8	143979	U-BOLT,VIBRATION DAMPING FOR 1 1/2" PIPE MCMASTER #3178735
9	1	155647	TANK,EXPANSION WATTS DETA-20
10	2	161733	RELAY,ENCLOSED PRE-WIRED DPDT GRAINGER #2ETA3
11	2	162598	SWEP BDW16DWH X139 HEAT EXCHANGER
12	2	163115	ENCLOSURE,INDOOR WITH LIFT-OFF COVER AND KNOCKOUTS, 6" X 6" X 4"
13	1	163147 / B12684	ASSEMBLY,SKID BASE FOR AEGIS DUAL SWEP HX, COATED
14	1	163151 / B12679	ASSEMBLY,SWEP HX SUPPORT STANCHION, COATED
15	1	163152 / B12670	SUB,ASSEMBLY PRIMARY OUTLET PLUMBING FOR AEGIS DUAL HX SKID
16	1	163153 / B12671	SUB,ASSEMBLY PRIMARY INLET PLUMBING FOR AEGIS DUAL HX SKID
17	1	163154 / B12672	SUB,ASSEMBLY SECONDARY INLET PLUMBING FOR AEGIS DUAL HX SKID
18	1	163155 / B12673	SUB,ASSEMBLY SECONDARY OUTLET PLUMBING FOR AEGIS DUAL HX SKID
19	1	163172 / B12685	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET-OUTSIDE, COATED
20	1	163177 / B12686	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET-INSIDE, COATED
21	1	163181 / B12687	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET-OUTSIDE, COATED
22	1	163185 / B12688	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET-OUTSIDE, COATED
23	1	163191 / B12689	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET-BACK, COATED
24	1	163198 / B12690	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET-BACK, COATED
25	1	163202 / B12691	ASSEMBLY,PLUMBING SUPPORT STANCHION, COATED
26	1	163206 / B12692	ASSEMBLY,PUMP SUPPORT STANCHION, COATED
27	3	163210 / B12694	BRACKET,SECONDARY STANCHION SUPPORT BRACE, COATED
28	4	163216 / B12696	BRACKET,ELECTRIC BOX SUPPORT BRACE, COATED
29	1	163218 / B12697	BRACKET,PUMP STANCHION SUPPORT BRACE, COATED
30	1	163221 / B12698	BRACKET,PUMP TO PRIMARY STANCHION SUPPORT BRACE, COATED
31	1	163223 / B12699	BRACKET,PRIMARY STANCHION SUPPORT BRACE, COATED
32	1	163207 /163208	BRACKET,PLUMBING SUPPORT PRIMARY INLET-FRONT, COATED
33	4	164417	U-BOLT,VIBRATION DAMPING FOR 1 1/4" PIPE MCMASTER #3178734

NOTES:
1. ORIENT THE EXPANSION TANK WITH THE GAUGES FACING FORWARD AS SHOWN. SEE ENGINEERING FOR EXPANSION TANK DRILL FIXTURE TO DRILL THREE HOLES FOR 5/16" BOLT INTO TANK BASE.
2. MOUNT SWEP HX STANCHION AND HX ONTO SKID BASE FIRST (NOTE: THE STUDS ON THE SWEP HX ARE M8X20, USE PN 154765). BEGIN WITH PRIMARY PLUMBING FIRST, MOUNTING CORRESPONDING STANCHIONS ONTO BASE TO ENSURE PLUMBING ALIGNS WITH THE HX, EXPANSION TANK, AND STANCHIONS.
3. REPEAT THIS PROCESS WITH THE SECONDARY PLUMBING.
4. USE 1/4-20 BOLTS (55854), NUTS (3475), AND WASHERS (15607) TO MOUNT STANCHIONS ONTO BASE, AND BRACKETS TO STANCHIONS.
5. USE 1/2" HEX NUTS AND BOLTS TO SUPPORT THE POTABLE PUMP AS SHOWN IN THE FRONT VIEW.
6. REFERENCE DRAWING B12668 FOR WIRING DIAGRAM.
7. NO COMPONENT, INCLUDING BALL VALVES OR CONTROL VALVES, SHALL OVERHANG THE SKID BASE AS SHOWN IN THE TOP VIEW. ROTATE VALVES IN CLOSED POSITION FOR SHIPPING.
8. PLACE ARROW DECALS ON PLUMBING AS SHOWN IN THE TOP VIEW.
9. PLUMBING LABELS FOR INLETS/OUTLETS ARE AS FOLLOWS:
   - ITEM 15 (PRIMARY OUTLET) = FROM HX OUTLET TO HEAT PUMP INLET
   - ITEM 16 (PRIMARY INLET) = FROM HEAT PUMP OUTLET TO HX INLET
   - ITEM 17 (SECONDARY INLET) = POTABLE INLET
   - ITEM 18 (SECONDARY OUTLET) = POTABLE OUTLET

ISSUED
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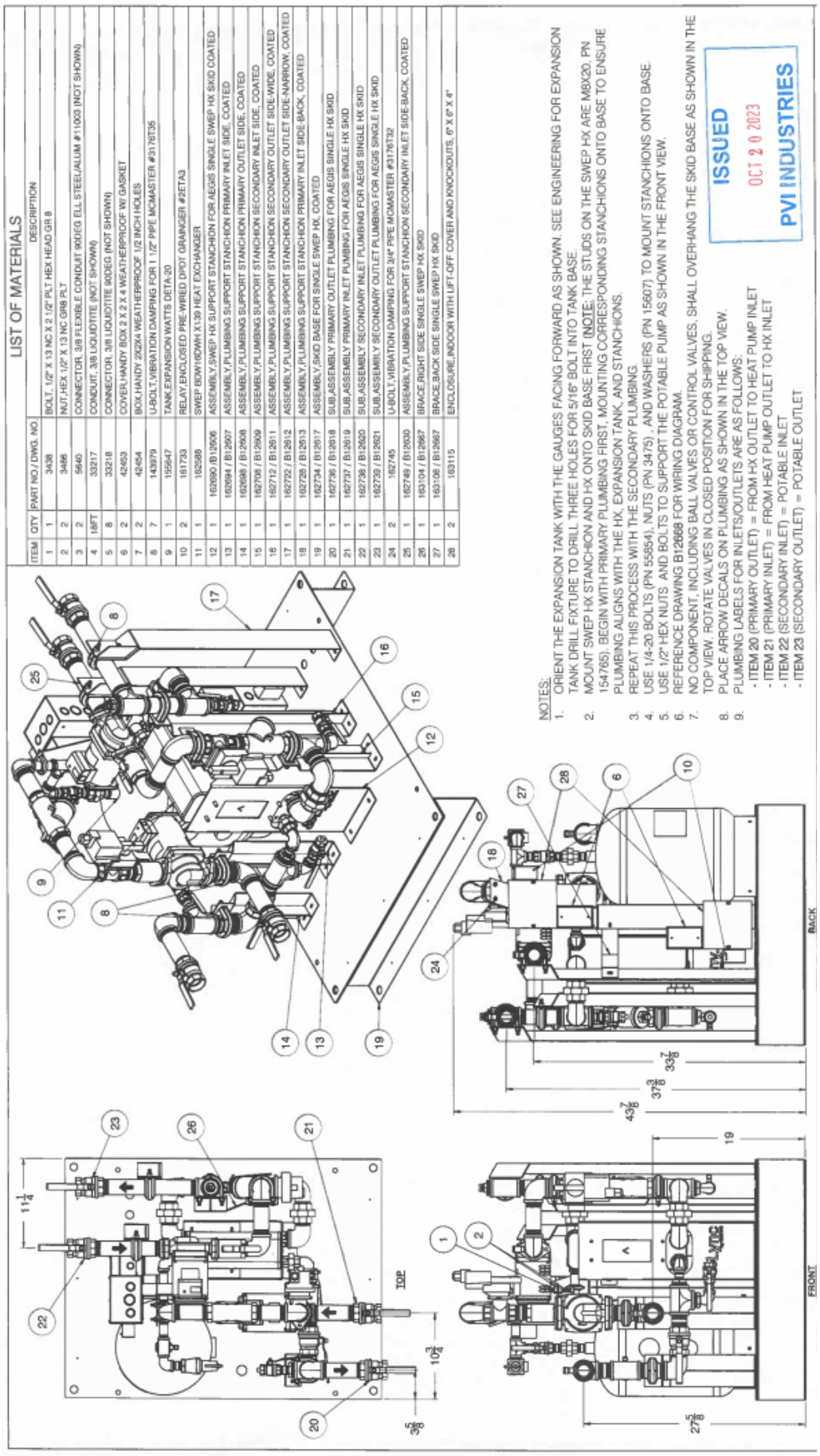
PVI INDUSTRIES



LIST OF MATERIALS

ITEM	QTY	PART NO./ DWG. NO	DESCRIPTION
1	1	3438	BOLT, 1/2" X 13 NC X 2 1/2" PLT HEX HEAD GR 8
2	2	3486	NUT,HEX 1/2" X 13 NC GR8 PLT
3	2	5840	CONNECTOR, 3/8 FLEXIBLE CONDUIT 90DEG (LLL STEEL/ALUM # 11003 (NOT SHOWN)
4	16FT	33217	CONDUIT, 3/8 LIQUIDTITE (NOT SHOWN)
5	8	33218	CONNECTOR, 3/8 LIQUIDTITE 90DEG (NOT SHOWN)
6	2	42453	COVER,HANDY BOX 2 X 2 X 4 WEATHERPROOF W/ GASKET
7	2	42454	BOX,HANDY 2X2X4 WEATHERPROOF 1/2 INCH HOLES
8	7	143979	U-BOLT,VIBRATION DAMPING FOR 1 1/2" PIPE MCMASTER #3176T35
9	1	155647	TANK,EXPANSION WATTS DETA-20
10	2	161733	RELAY,ENCLOSED PRE-WIRED DPDT GRAINGER #3ET43
11	1	162588	SWEP B0W16DWH X139 HEAT EXCHANGER
12	1	162590 /B12606	ASSEMBLY,SWEP HX SUPPORT STANCHION FOR AEGIS SINGLE SWEP HX SKID COATED
13	1	162594 / B12607	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE, COATED
14	1	162598 / B12608	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET SIDE, COATED
15	1	162706 / B12609	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE, COATED
16	1	162712 / B12611	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-WIDE, COATED
17	1	162722 / B12612	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-NARROW, COATED
18	1	162728 / B12613	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE-BACK, COATED
19	1	162734 / B12617	ASSEMBLY,SKID BASE FOR SINGLE SWEP HX, COATED
20	1	162736 / B12618	SUB,ASSEMBLY PRIMARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
21	1	162737 / B12619	SUB,ASSEMBLY PRIMARY INLET PLUMBING FOR AEGIS SINGLE HX SKID
22	1	162738 / B12620	SUB,ASSEMBLY SECONDARY INLET PLUMBING FOR AEGIS SINGLE HX SKID
23	1	162739 / B12621	SUB,ASSEMBLY SECONDARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
24	2	162745	U-BOLT,VIBRATION DAMPING FOR 3/4" PIPE MCMASTER #3176T32
25	1	162749 / B12630	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE-BACK, COATED
26	1	163104 / B12667	BRACE,RIGHT SIDE SINGLE SWEP HX SKID
27	1	163106 / B12667	BRACE,BACK SIDE SINGLE SWEP HX SKID
28	2	163115	ENCLOSURE,INDOOR WITH LIFT-OFF COVER AND KNOCKOUTS, 6" X 6" X 4"

NOTES:
1. ORIENT THE EXPANSION TANK WITH THE GAUGES FACING FORWARD AS SHOWN. SEE ENGINEERING FOR EXPANSION TANK DRILL FIXTURE TO DRILL THREE HOLES FOR 5/16" BOLT INTO TANK BASE.
2. MOUNT SWEP HX STANCHION AND HX ONTO SKID BASE FIRST (NOTE: THE STUDS ON THE SWEP HX ARE M8X20, PN 154765). BEGIN WITH PRIMARY PLUMBING FIRST, MOUNTING CORRESPONDING STANCHIONS ONTO BASE TO ENSURE PLUMBING ALIGNS WITH THE HX, EXPANSION TANK, AND STANCHIONS.
3. REPEAT THIS PROCESS WITH THE SECONDARY PLUMBING.
4. USE 1/4-20 BOLTS (PN 55854), NUTS (PN 3475) , AND WASHERS (PN 15607) TO MOUNT STANCHIONS ONTO BASE.
5. USE 1/2" HEX NUTS AND BOLTS TO SUPPORT THE POTABLE PUMP AS SHOWN IN THE FRONT VIEW.
6. REFERENCE DRAWING B12668 FOR WIRING DIAGRAM.
7. NO COMPONENT, INCLUDING BALL VALVES OR CONTROL VALVES, SHALL OVERHANG THE SKID BASE AS SHOWN IN THE TOP VIEW. ROTATE VALVES IN CLOSED POSITION FOR SHIPPING.
8. PLACE ARROW DECALS ON PLUMBING AS SHOWN IN THE TOP VIEW.
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ISSUED
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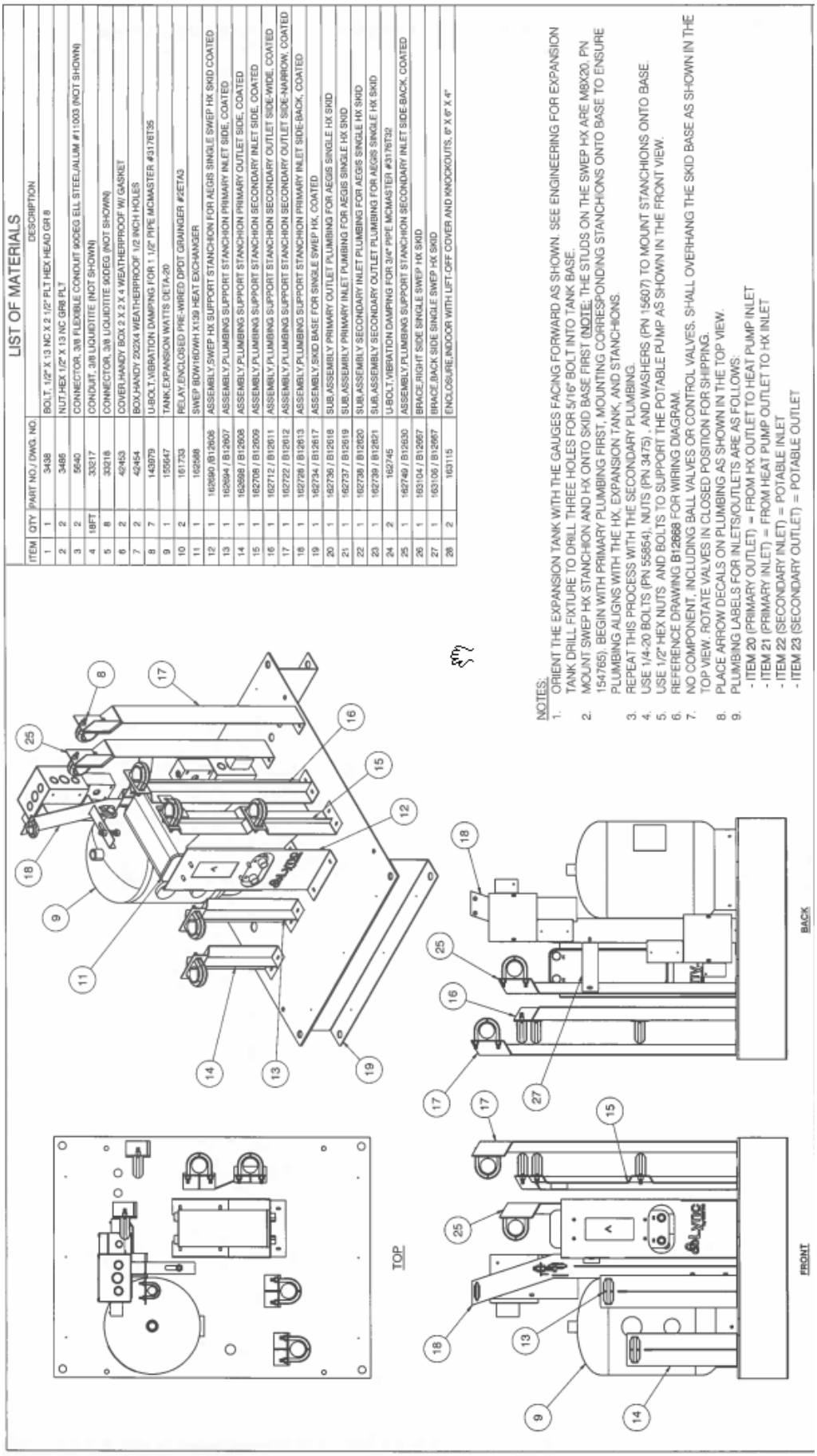

LIST OF MATERIALS

ITEM	QTY	PART NO./ DWG. NO.	DESCRIPTION
1	1	3438	BOLT, 1/2" X 13 NC X 2 1/2" PLT HEX HEAD GR 8
2	2	3486	NUT,HEX 1/2" X 13 NC GR8 PLT
3	2	5640	CONNECTOR, 3/8 FLEXIBLE CONDUIT 90DEG ELL STEEL/ALUM #11003 (NOT SHOWN)
4	18FT	33317	CONDUIT, 3/8 LIQUIDTITE (NOT SHOWN)
5	8	33218	CONNECTOR, 3/8 LIQUIDTITE 90DEG (NOT SHOWN)
6	2	42453	COVER,HANDY BOX 2 X 2 X 4 WEATHERPROOF W/ GASKET
7	2	42454	BOX,HANDY 2X2X4 WEATHERPROOF 1/2 INCH HOLES
8	7	143879	U-BOLT,VIBRATION DAMPING FOR 1 1/2" PIPE MCMASTER #3176T35
9	1	155647	TANK,EXPANSION WATTS DETA-20
10	2	161733	RELAY,ENCLOSED PRE-WIRED DPDT GRAINGER #2E743
11	1	162588	SWEP B0W160WH X139 HEAT EXCHANGER
12	1	162690 /B12606	ASSEMBLY,SWEP HX SUPPORT STANCHION FOR AEGIS SINGLE SWEP HX SKID COATED
13	1	162694 / B12607	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE, COATED
14	1	162698 / B12608	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY OUTLET SIDE, COATED
15	1	162708 / B12609	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE, COATED
16	1	162712 / B12611	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-WIDE, COATED
17	1	162722 / B12612	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY OUTLET SIDE-NARROW, COATED
18	1	162729 / B12613	ASSEMBLY,PLUMBING SUPPORT STANCHION PRIMARY INLET SIDE-BACK, COATED
19	1	162734 / B12617	ASSEMBLY,SKID BASE FOR SINGLE SWEP HX, COATED
20	1	162736 / B12618	SUB,ASSEMBLY PRIMARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
21	1	162737 / B12619	SUB,ASSEMBLY PRIMARY INLET PLUMBING FOR AEGIS SINGLE HX SKID
22	1	162738 / B12620	SUB,ASSEMBLY SECONDARY INLET PLUMBING FOR AEGIS SINGLE HX SKID
23	1	162739 / B12621	SUB,ASSEMBLY SECONDARY OUTLET PLUMBING FOR AEGIS SINGLE HX SKID
24	2	162745	U-BOLT,VIBRATION DAMPING FOR 3/4" PIPE MCMASTER #3176T32
25	1	162740 / B12630	ASSEMBLY,PLUMBING SUPPORT STANCHION SECONDARY INLET SIDE-BACK, COATED
26	1	163104 / B12667	BRACE,RIGHT SIDE SINGLE SWEP HX SKID
27	1	163106 / B12667	BRACE,BACK SIDE SINGLE SWEP HX SKID
28	2	163115	ENCLOSURE,INDOOR WITH LIFT-OFF COVER AND KNOCKOUTS, 6" X 6" X 4"

NOTES:
1. ORIENT THE EXPANSION TANK WITH THE GAUGES FACING FORWARD AS SHOWN. SEE ENGINEERING FOR EXPANSION TANK DRILL FIXTURE TO DRILL THREE HOLES FOR 5/16" BOLT INTO TANK BASE.
2. MOUNT SWEP HX STANCHION AND HX ONTO SKID BASE FIRST (NOTE: THE STUDS ON THE SWEP HX ARE M8X20, PN 154765). BEGIN WITH PRIMARY PLUMBING FIRST, MOUNTING CORRESPONDING STANCHIONS ONTO BASE TO ENSURE PLUMBING ALIGNS WITH THE HX, EXPANSION TANK, AND STANCHIONS.
3. REPEAT THIS PROCESS WITH THE SECONDARY PLUMBING.
4. USE 1/4-20 BOLTS (PN 55854), NUTS (PN 3475) , AND WASHERS (PN 15607) TO MOUNT STANCHIONS ONTO BASE
5. USE 1/2" HEX NUTS AND BOLTS TO SUPPORT THE POTABLE PUMP AS SHOWN IN THE FRONT VIEW.
6. REFERENCE DRAWING B12668 FOR WIRING DIAGRAM.
7. NO COMPONENT, INCLUDING BALL VALVES OR CONTROL VALVES, SHALL OVERHANG THE SKID BASE AS SHOWN IN THE TOP VIEW. ROTATE VALVES IN CLOSED POSITION FOR SHIPPING.
8. PLACE ARROW DECALS ON PLUMBING AS SHOWN IN THE TOP VIEW.
9. PLUMBING LABELS FOR INLETS/OUTLETS ARE AS FOLLOWS:
   - ITEM 20 (PRIMARY OUTLET) = FROM HX OUTLET TO HEAT PUMP INLET
   - ITEM 21 (PRIMARY INLET) = FROM HEAT PUMP OUTLET TO HX INLET
   - ITEM 22 (SECONDARY INLET) = POTABLE INLET
   - ITEM 23 (SECONDARY OUTLET) = POTABLE OUTLET