

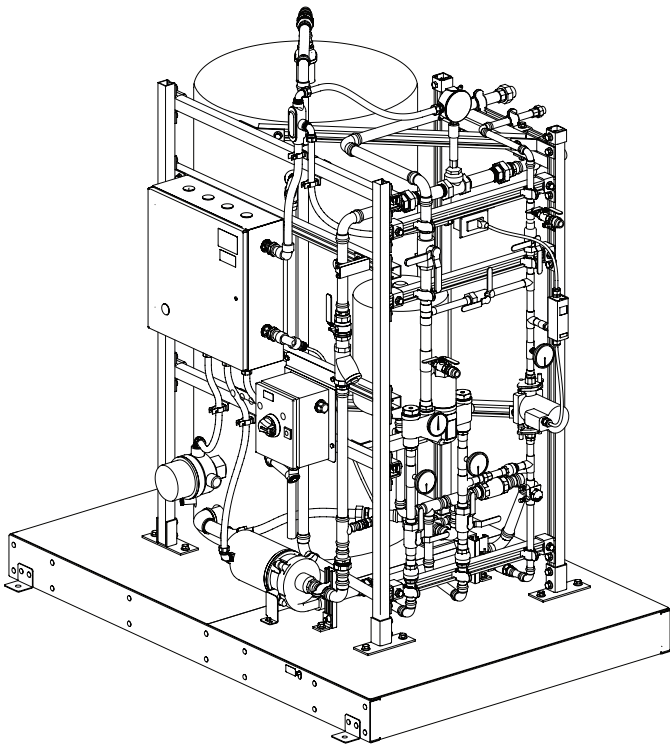
Installation

**NTS1 (One Station)
NTS2 (Two Station)**

Navigator® Tepid Water Skid System

**Hot Water Tank with Navigator®
Emergency Fixture Thermostatic
Mixing Valve**

General Area



Model NTS1 shown - Includes optional
recirculation line and booster pump



**Read the instructions in this manual before
beginning installation. Save these instructions
and refer to them for inspection, maintenance
and troubleshooting information.**

Table of Contents

Safety Information	2
Dimensions	3-6
Shipping and Handling Instructions.	7
Skid System Preconstruction Guide	8
Storage and Preservation Guide.	8
Prepare Skid System.	9
Electrical Connections.	9
Connect Water Supply.	10
Tank Fill	11
Energizing the Unit	11
Adjust Temperature	12-13
Water Recirculation Setup (if equipped)	14
Start-up Checklist	15
Weekly Inspection Checklist	15
Performing Preventive Maintenance	16
Troubleshooting	16

For questions regarding the operation, installation or maintenance of this product, visit bradleycorp.com
or call 800.BRADLEY (800.272.3539).

Product warranties and parts information may also be found on our website at bradleycorp.com.



Safety Information

To reduce the risk of serious injury or death:

Installation

Failure to comply with proper installation and maintenance could contribute to a valve failure resulting in severe bodily injury including scalding, chilling and/or death depending upon system water pressure changes and/or supply water temperature changes.

ANSI/ISEA Z358.1 requires this unit to be used with a clean, potable, uninterrupted supply of water. Constant power supply to safety equipment is necessary for it to function and to keep water tepid.

Before installation make sure that this equipment will meet the requirements of the potential hazardous contaminants in your location.

Installation and maintenance of this system must be completed by a qualified plumber and electrician in compliance with all national and local codes. Compliance and conformity to local codes and ordinances is the responsibility of the installer. Use this Thermostatic Mixing in accordance with ASSE standard 1071.

Weekly Inspections

Regular checking and cleaning of the valve's internal components and check stops is necessary for maximum life and proper product function. Periodic inspection and yearly maintenance by a licensed contractor is required. Corrosive water conditions and/or unauthorized adjustments or repairs could render the valve ineffective for its intended service. Frequency of cleaning and inspection depends upon local water conditions.

Operation of emergency thermostatic mixing valves and fixtures must be tested weekly per ANSI/ISEA Z358.1.

Perform regular checks of the recirculation pump and flow switch (if equipped) along with strainers for clogged debris and clean if necessary.

Water Temperature

ANSI/ISEA Z358.1 requires tepid water. Suitable range is 60°F to 100°F (16°C to 38°C). Personal injury is possible outside this temperature range. Output temperature of the valve must be checked and adjusted at initial installation and on a quarterly basis.

This valve does not provide protection from pipe freezing.

Moving the Skid System

Drain the hot water tank completely before moving. Lifting or moving a tank with water may cause damage to the unit or a loss of stability when in motion.

Perform functional test upon relocation of equipment.

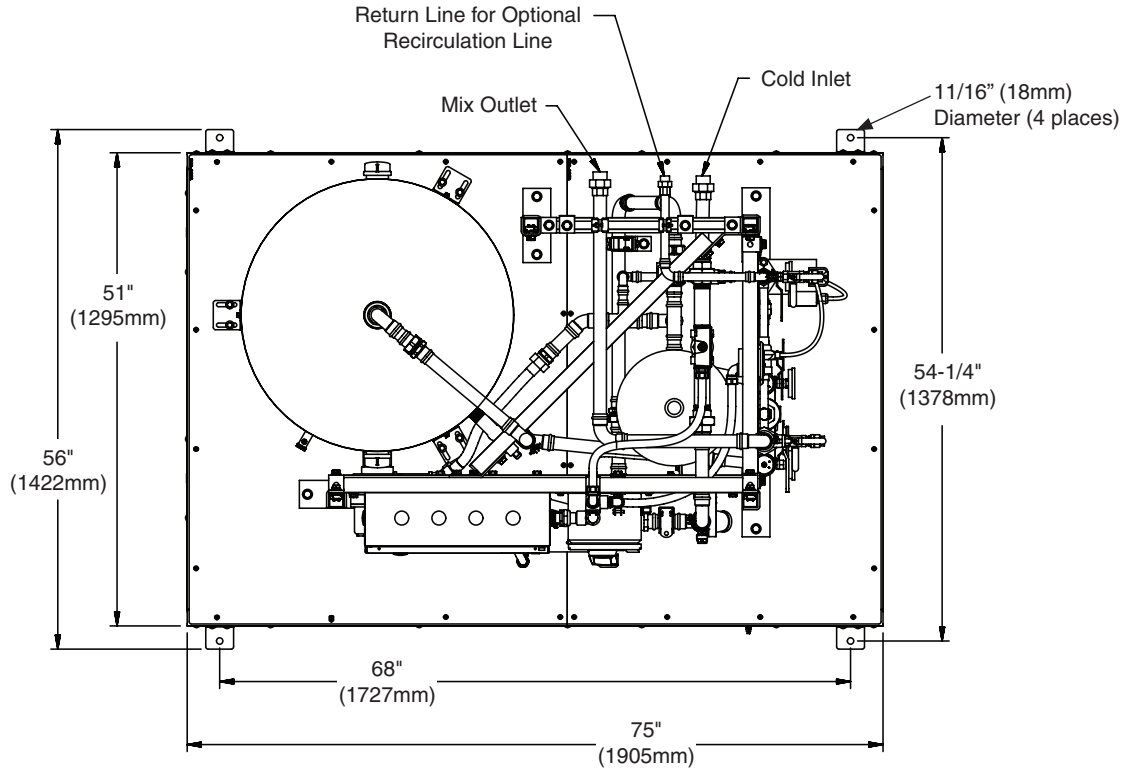
To avoid product or property damage:

- Make all water and electrical connections at temperatures above freezing (32°F (0°C)).

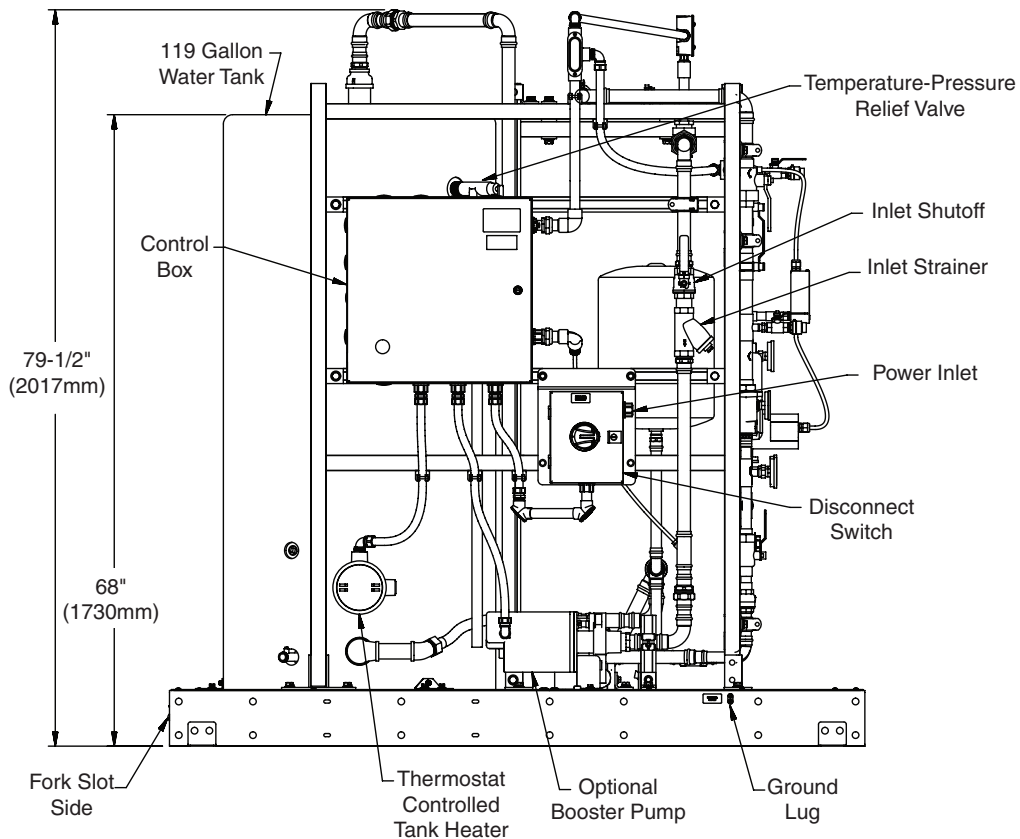
Dimensions - Model NTS1 (Single Shower Station)

Top View

(includes optional recirculation line and booster pump)

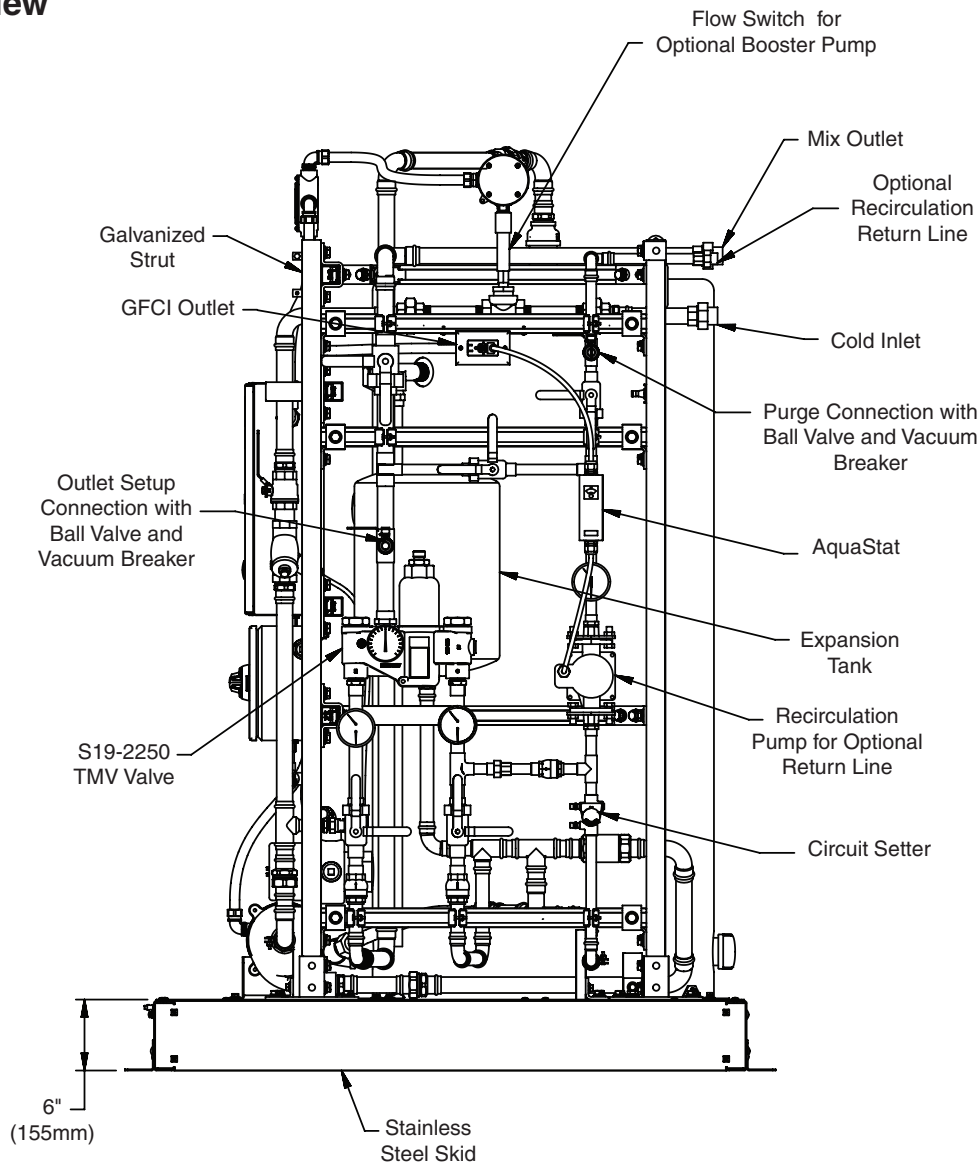


Front View



Dimensions- Model NTS1 (Single Shower Station)

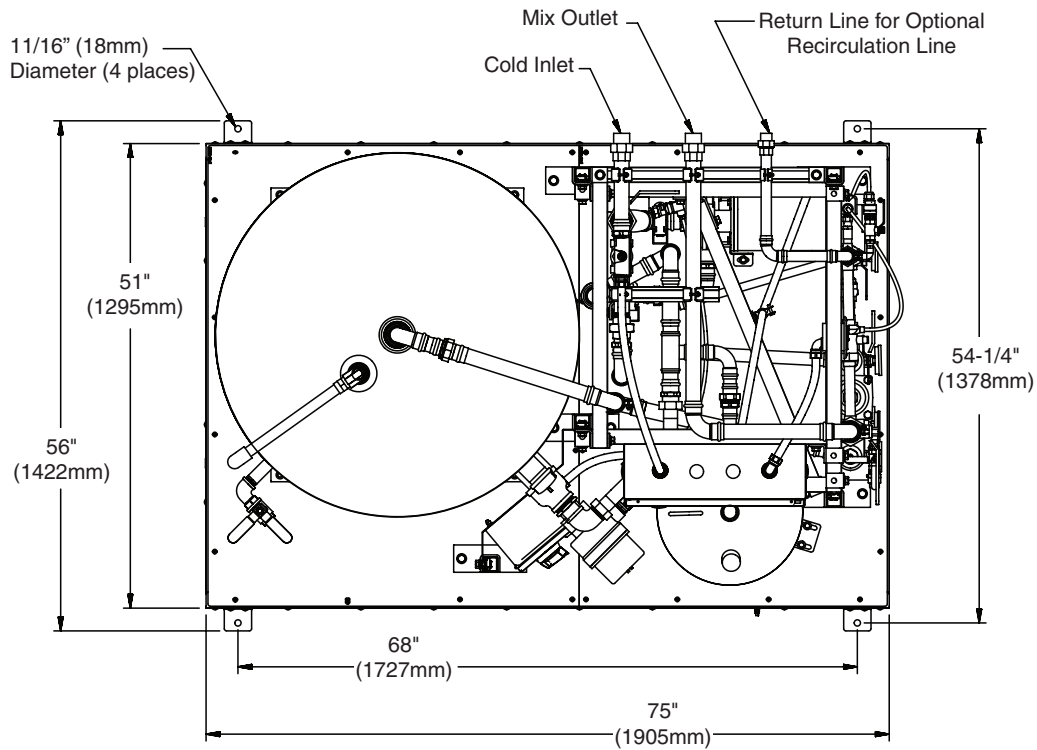
Right Side View



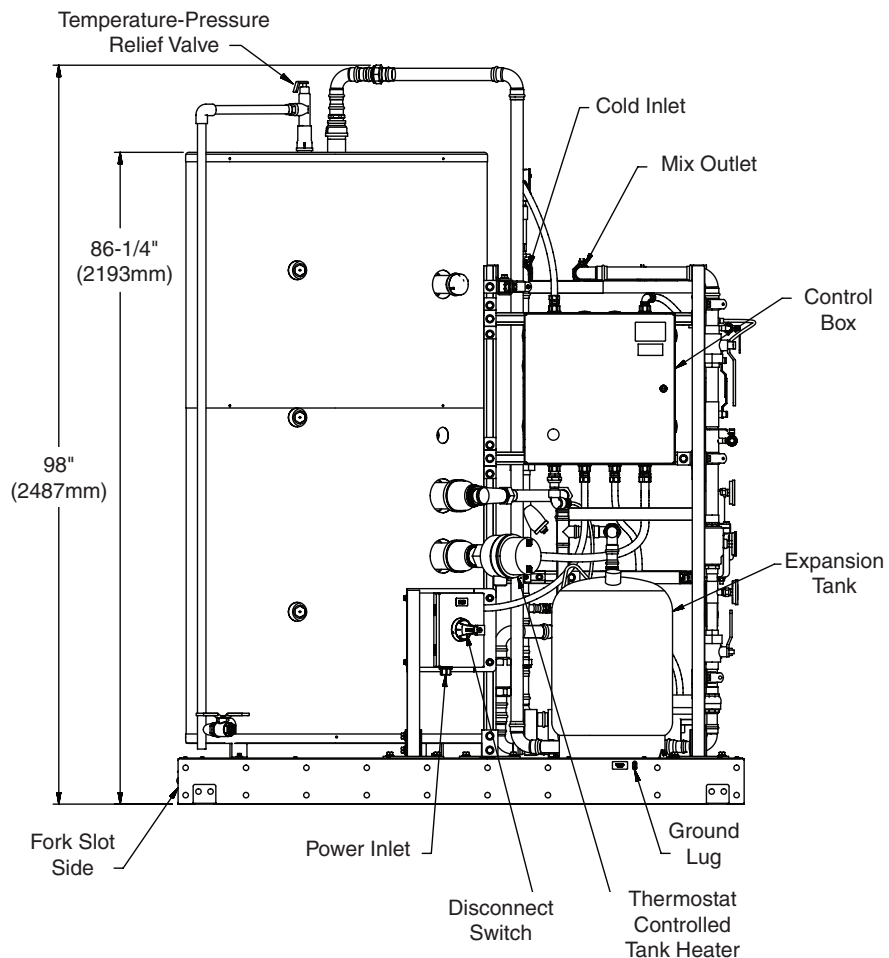
Dimensions - Model NTS2 (Two Shower Station)

Top View

(includes optional recirculation line and booster pump)

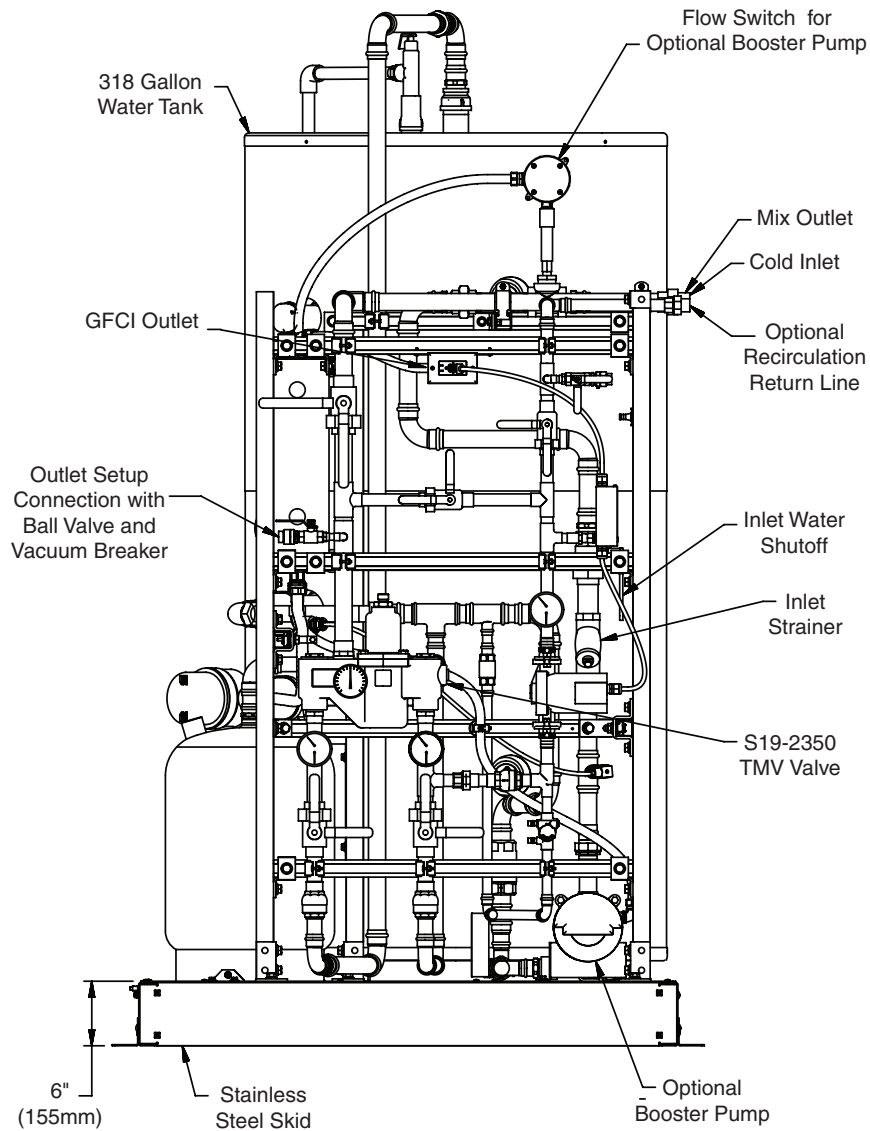


Front View



Dimensions Dimensions - Model NTS2 (Two Shower Station)

Right Side View



Shipping and Handling Instructions

Description	Approximate Weight (less shipping skid)
NTS1 (One Station Shower) Navigator Tepid Water Skid System	1800 lbs.*
NTS2 (Two Shower Station) Navigator Tepid Water Skid System	2000 lbs.*

*Weight will vary depending on options selected.

Transporting the Skid System



Bradley Skid Systems are transported within the continental United States and Canada via commercial truck.

NOTICE! Use caution when transporting, and always use proper lifting techniques. Weight distribution is unbalanced and the product is susceptible to tipping which will result in damage to the product.

NOTICE! Check load ratings on equipment intended to be used to transport the enclosure. Standard safety procedures for forklift transport of larger than 2000 pounds should be followed at all times.

- **Bottom Lift:** Locate fork slots on one end of skid base. During transit, transport close to the ground. Use all standard safety measures and precautions prior to and during transit.
- If immediate destination of the unit is storage, refer to the Storage and Preservation Guide.



Each Skid System will be accompanied by document packaging that includes the installation instructions and electrical schematics, if applicable. Store documents for reference.

Skid System Preconstruction Guide

Thank you for your business. The purpose of Bradley's Skid System preconstruction guide is to provide important pre-installation information to the customer that has determined their product specification needs are met by one of our skid systems. For system details refer to all documents included with the skid system. If additional information is still required contact the Bradley Corporation Technical Service Department.

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

- Concrete slab rated to support a minimum 4000 lb load requirement
- Electrical supply materials (if applicable)
- Plumbing supply materials (if applicable)
- Properly rated lifting equipment which exceeds the total weight of the skid system unit

⚠ WARNING DO NOT energize skid system without first following all instructions in Steps 1 thru 7. Connections should be performed by a certified electrician and plumber only.

Pre-installation Instructions



All practices are based on local codes and standards.

- Contact the authority having jurisdiction over local codes and ordinances regarding the disposal of waste water prior to installation.
- Contact the authority having jurisdiction over local codes and ordinances regarding the plumbing and electrical codes prior to installation.
- If concrete is not already present, pour a concrete pad with a minimum size of 5'-6" x 7'-0".
- Confirm that the installation area is a level plane.
- Make allowances to ensure the skid system is grounded prior to connecting power to the skid system
- Survey the facility to ensure that the appropriate flushing system is installed per the ANSI/ISEA Z358.1 requirements. Identify a location that is capable of delivering a supply of water and power which will meet system plumbing and electrical requirements.
- Review minimum electrical requirements based on the unit and options selected. Refer to wiring schematic or system rating labels provided with unit.

Storage and Preservation Guide



Keep Bradley Skid Systems stored in original packaging until installation.

Recommended Storage Criteria

- Store Bradley Skid System where temperatures are above 35°F (5°C) at all times.
- Indoor storage is recommended.
- Minimize excessive transportation around a job site to reduce risk of damage.

Alternate Storage

If the Bradley Skid System is stored in an outdoor environment, care should be taken to protect the Skid System from rain or other falling precipitation via tarp or other waterproof material or runoff and accumulation of ground water from any source that may exceed 3" depth.

1 Prepare Skid System

- ⚠ WARNING** To prevent personal injury or damage to the components, follow all manufacturer's warnings and instructions when performing any maintenance or installation of components used in this Skid System.
- ⚠ WARNING** To prevent personal injury and electrical system failure, **DO NOT** energize electrical power prior to priming the water in the system.
- ⚠ WARNING** To prevent personal injury, component damage or electrical system failure, **DO NOT** energize the pump (if applicable) until the water is primed.
- ⚠ WARNING** System is not freeze protected without an energized electrical connection. It is recommended that installation be completed when ambient temperature is above freezing.
- ⚠ WARNING** To prevent personal injury and damage to the unit, the installer may need to provide adequate support for the supply piping.

2 Electrical Connections



Some steps apply to optional components. Review and follow if applicable.

- ⚠ WARNING** To prevent personal injury and damage to the components, surge protection is recommended.
- ⚠ WARNING** To prevent personal injury and damage to the components, follow all manufacturer's warnings and instructions when performing any maintenance or installation of components used in this Skid System.
- ⚠ WARNING** To prevent personal injury or damage to the components, make sure electrical disconnect is in the OFF position.
- ⚠ WARNING** To prevent personal injury and electrical system failure, **DO NOT** energize the pump (if present) until the water is primed.
- NOTICE!** To prevent damage to the electronics or internal wiring, do not perform any brazing or sweat soldering inside the enclosure box.
- NOTICE!** System is not freeze protected without an energized electrical connection. It is recommended that installation be completed when ambient temperature is above freezing.



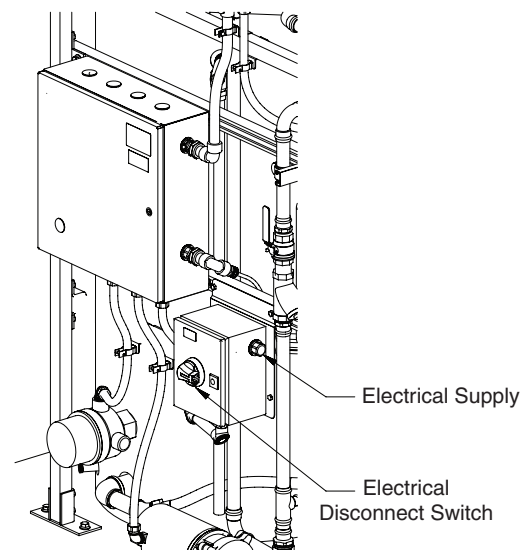
Install system according to national and local electrical codes. Follow all lockout/tagout procedures when performing any electrical maintenance to the system.

A Verify that disconnect switch is in the OFF position.

B Install the ¾" conduit for the incoming power into the disconnect switch.

C Route the electrical supply wires to the wire leads leading from the disconnect switch, including the neutral wire if applicable. Refer to the system's electrical wiring schematic drawings included in the document package for proper conductor size and maximum electrical protection.

D Close the disconnect switch box, but **DO NOT** energize.



3 Connect Water Supply

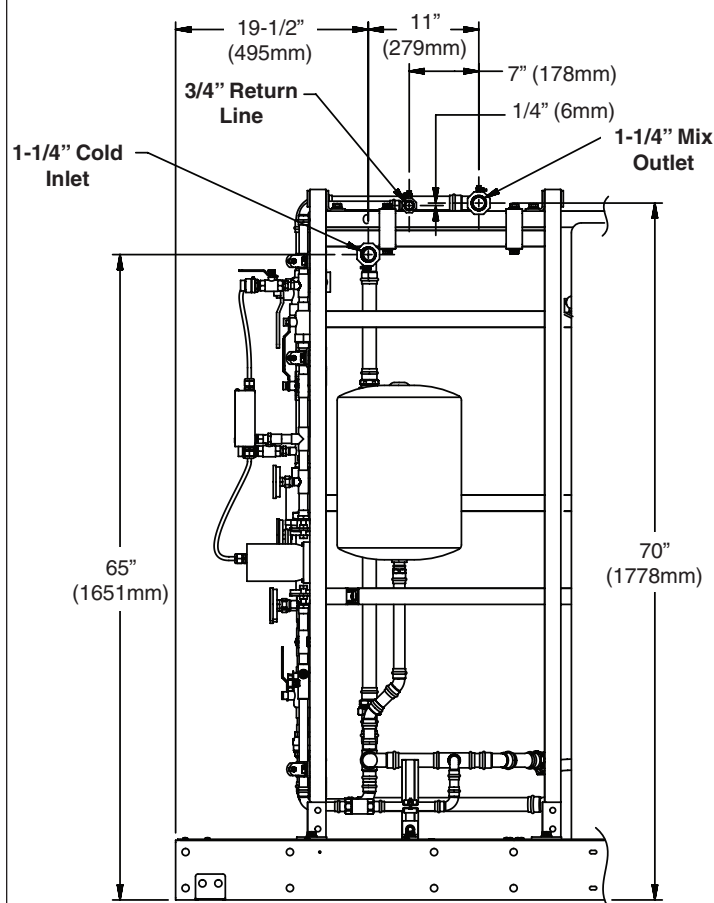
A

Apply pipe sealant or Teflon tape to seal all pipe and fitting connections. Use care to avoid excess pipe sealant or Teflon tape which may enter the plumbing system. Ensure all fitting connections are properly secured.

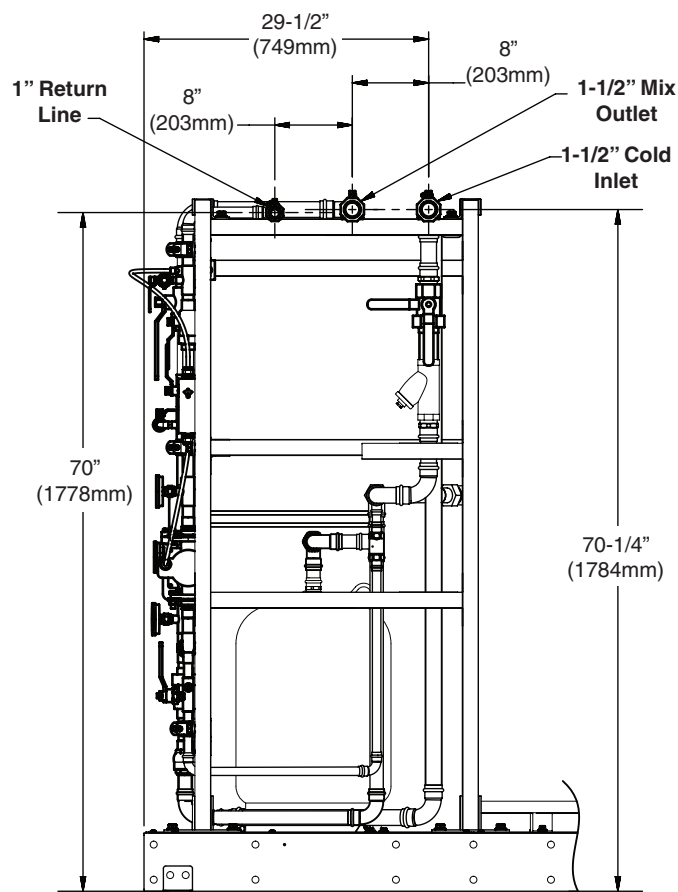
B

Connect water supply lines per pipe sizes shown below (piping by installer).

Back View - Rough-Ins (NTS1 Single Station)



Back View - Rough-Ins (NTS2 Two Station)



4 Tank Fill



Make sure all valves (supply inlet, mixing valve inlets and outlet, and tank safety valve) are closed before beginning.

A

Open the temperature-pressure relief valve on top of water tank. This vents the air from the top of the tank during fill.

B

Open the cold supply inlet valve. The tank will begin to fill. Continue filling the tank until water comes out of the overflow pipe. This confirms that air is purged from the tank.

C

Close the temperature-pressure relief valve.

D

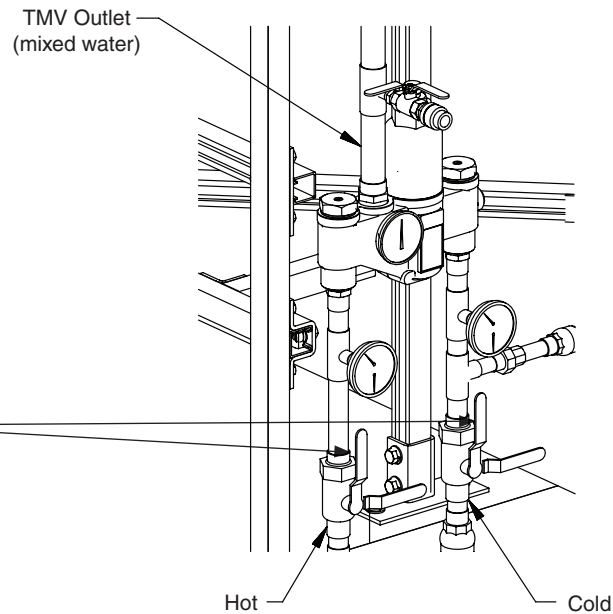
Gradually open the mixing valve inlets.

E

Check all system fittings for water leaks.



Actual components, valves and plumbing may be different than what is shown.



5 Energizing the Unit



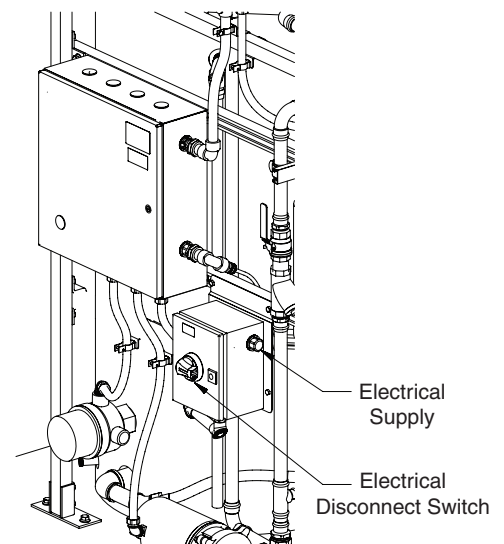
If recirculation pump is supplied, make sure pump is unplugged from GFCI outlet.

A

Make sure the system is NOT energized and perform a continuity test on all of the fuses, verifying that all fuses are good. Verify that there are no explosive vapors in the vicinity, or that all junction boxes and the control panel are tightly closed per hazardous location codes and standards.

B

Turn on the power at the electrical disconnect switch.



6a Adjust Temperature - Option 1 (From Test Connection)



DO NOT SKIP THIS STEP!!!



This device must be checked for final temperature and adjusted as necessary. The standard preset factory temperature setting is 85°F (29°C). [the range of the valve is 65°F – 90°F (18°C – 32°C)]. Consult proper medical and/or safety authorities for the optimum temperature recommended for your particular application.



Allow enough time for water in storage tank to get hot before making any temperature adjustments with the thermostatic mixing valve.

A

Verify ball valves 1 and 2 (BV1 and BV2) are in the open positions. Close ball valve 3 (BV3) and verify BV5 (if equipped) is closed.

B

Connect hose to outlet setup connection on valve outlet.

C

Open outlet setup connection ball valve and check the temperature when approximately 10 GPM water flow is reached and adjust if necessary.

D

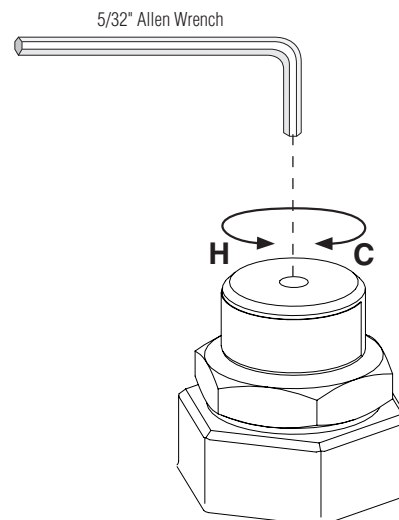
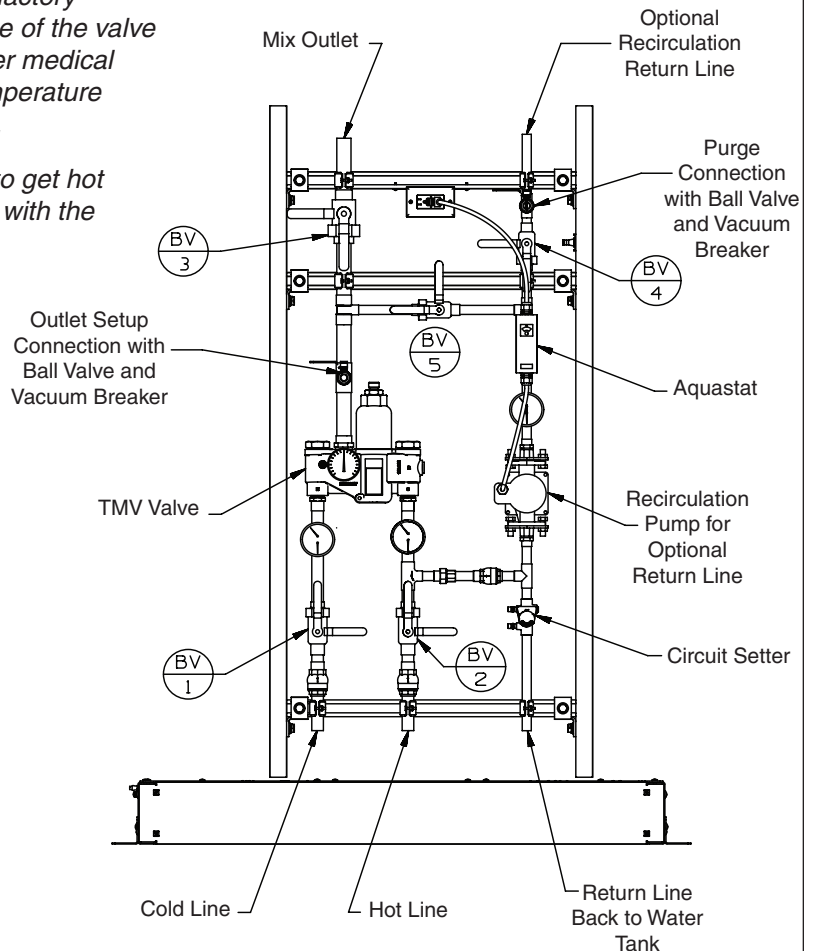
Insert 5/32 Allen Wrench through the hole in the cap of valve and into the set screw to adjust.

E

To test the thermostatic mixing valve, shut the hot water supply off by closing hot water inlet valve or supply check valve. While the hot water supply is turned off, check to make sure the cold water continues to flow. If the cold water is flowing properly, reopen the hot water supply. Shut the cold water supply off by closing the cold water inlet valve or supply check valve. While the cold water supply is off, check to make sure that the hot water flow has shut down. If hot water is shut down, reopen cold water supply.

F

Close test port ball valve and remove hose connection. Reopen BV3; keep BV5 closed.



6b Adjust Temperature - Option 2 (From Building Fixtures)



DO NOT SKIP THIS STEP!!!



This device must be checked for final temperature and adjusted as necessary. The standard preset factory temperature setting is 85°F (29°C). [the range of the valve is 65°F – 90°F (18°C – 32°C)]. Consult proper medical and/or safety authorities for the optimum temperature recommended for your particular application.



Allow enough time for water in storage tank to get hot before making any temperature adjustments with the thermostatic mixing valve.

A

Verify ball valves 1 and 2 (BV1 and BV2) are in the open position. Open ball valve 3 (BV3) to fill plumbing system. Verify BV5 (if equipped) is closed.

B

When plumbing system is full, air can be purged from the system by opening building fixtures or attaching a hose to the purge connection (if equipped).

C

Open enough fixtures to check the temperature when approximately 10 GPM water flow is reached and adjust if necessary.

D

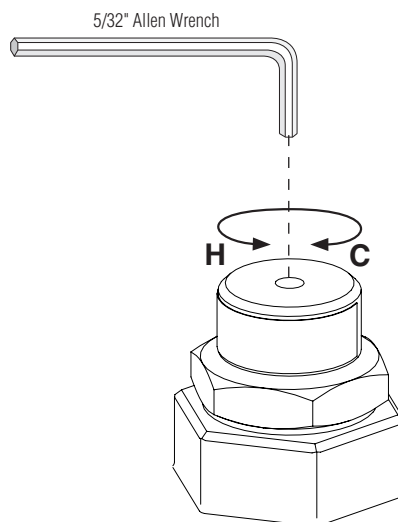
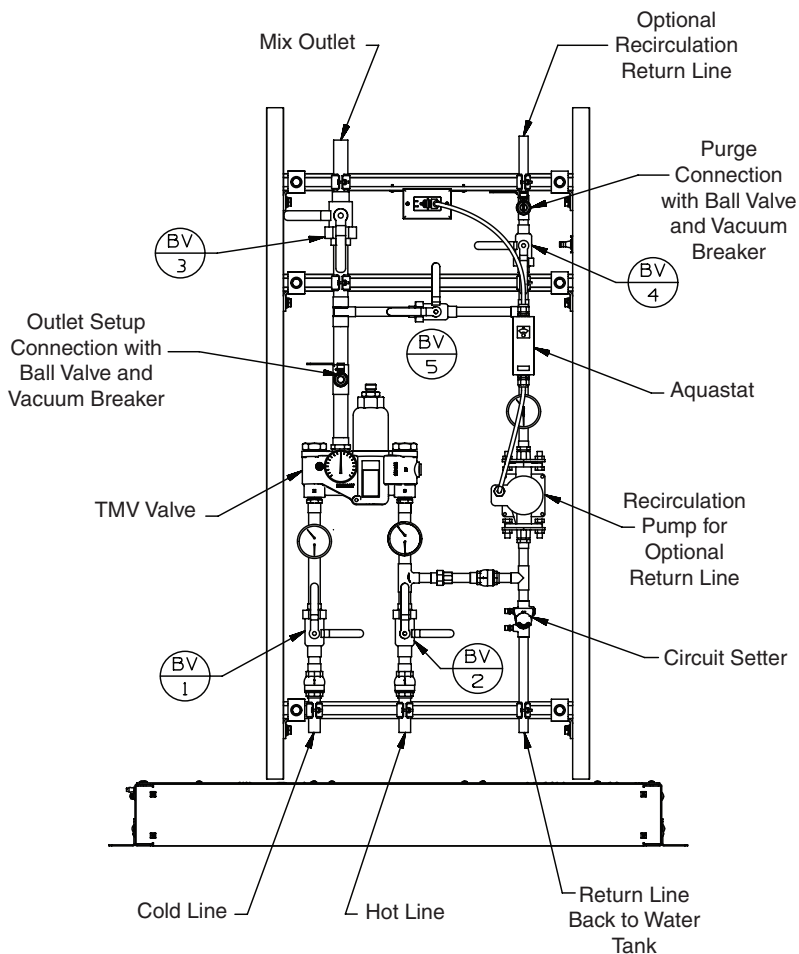
Insert 5/32 Allen Wrench through the hole in the cap of valve and into the set screw to adjust.

E

To test the thermostatic mixing valve, shut the hot water supply off by closing hot water inlet valve or supply check valve. While the hot water supply is turned off, check to make sure the cold water continues to flow. If the cold water is flowing properly, reopen the hot water supply. Shut the cold water supply off by closing the cold water inlet valve or supply check valve. While the cold water supply is off, check to make sure that the hot water flow has shut down. If hot water is shut down, reopen cold water supply.

F

Deactivate remote fixture.



7 Water Recirculation Setup (if equipped)



Do not run circulation pump dry. Operation without water circulation could result in pump or motor damage.



Recirculating the water in the system provides constant regulation of the water temperature. Flush the supply lines thoroughly after completing installation. Close off all fixtures and label them as not available for use during the recirculating process.

1. With the temperature adjusted on the thermostatic mixing valve and the recirculating pump off, make sure Ball Valve 5 (BV5) is closed.
2. Open Ball Valve 3 (BV3) to allow water throughout the building system. As water is circulating, trapped air in the system can be evacuated by using the purge connection in the return line. To do this, make sure Ball Valve 4 (BV4) is closed and then open the ball valve on the purge connection. Close the purge connection ball valve when air evacuation is complete. Reopen Ball Valve 4 (BV4); this will allow return line water thru to the cold inlet side of the thermostatic valve and to the hot water storage.
3. Plug in the recirculating pump and observe the temperature/pressure gauge in the return line. The temperature should rise.
4. Verify Aquastat temperature limit switch is set to 5° above the set point of the valve.
5. Set the circuit setter to allow 5% of the return line water back to the hot water storage.
6. Observe temperature for 30 minutes. If temperature increases, close circuit setter slightly. If temperature decreases, open circuit setter slightly. Repeat this until the system is balanced. When balanced, the thermostatic valve outlet temperature should be approximately 5° warmer than the return line temperature.
7. Tighten screw on circuit setter.

Start-up Checklist

Bradley Tepid Water Skid System Start-up Checklist	Complete OK	Inspector Initials
Initial Inspection		
Verify that a minimum of 50 psi is supplied to the inlet of the Skid System		
Skid System is mounted to a surface that can withstand a 4000 pound load.		
Verify system water supply is connected and all water supply valves are open.		
All remote fixtures are deactivated		
Check all system fittings for water leaks.		
Bradley Tepid Water Skid System with Hot Water Tank System Start-up and Test Checklist Completion & Approval		
System Serial Number:		
Inspection Date:		
Inspector Signature:		

Weekly Inspection Checklist

Survey the facility to ensure that the appropriate flushing system is installed per the ANSI/ISEA Z358.1 requirement.



Safety Data sheets can help determine what flushing system is appropriate for your hazards.

Bradley Tepid Water Skid System Weekly Inspection Checklist	Complete OK	Inspector Initials
Verify unit is energized.		
Power disconnect switch is in the "ON" position.		
Activate and inspect all fixtures to ensure they are compliant and operational in case of an emergency.		
Replace any broken or missing parts immediately.		
Remove any obstructions or trip hazards		
Test the remote fixtures to ensure proper water temperature is being achieved		
Document inspection on the unit's inspection tag and in any centrally-controlled documentation log.		

Performing Preventive Maintenance

For your system to work properly and have protection from freezing, keep the electrical components and pump dry.

Regularly clean any debris out of the Y-strainers.

WARNING: Monitor heater performance at each weekly fixture check.

Drained System Restart

The system may require restarting if the heater tank was drained for maintenance or any other reason after initial installation.

If the system has been drained and deactivated, follow Steps 4 and 5 prior to reactivation.

Troubleshooting

Problem	Cause	Solution
Water temperature is not tepid.	Thermostatic mixing valve may not be functioning properly.	See thermostatic mixing valve instruction sheet.
	Water heater may not be functioning properly.	Check the immersion heater and heater fuses.
	The power is off.	Check power to unit and check fuses.
	Hot water supply valve closed.	Open the hot water supply.