

Knight Boiler Series

Installation and Commissioning Guide



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This User Guide is Applicable to:

Knight Boiler Panels - No DHW

- T-BO-KO-1011** Knight Boiler Panel with (1) Low Temp Zone and (1) Take Off
- T-BO-KO-1021** Knight Boiler Panel with (2) Low Temp Zone and (1) Take Off
- T-BO-KO-1031** Knight Boiler Panel with (3) Low Temp Zones and (1) Take Off
- T-BO-KO-1040** Knight Boiler Panel with (4) Low Temp Zones

Knight Boiler Panels - DHW Priority

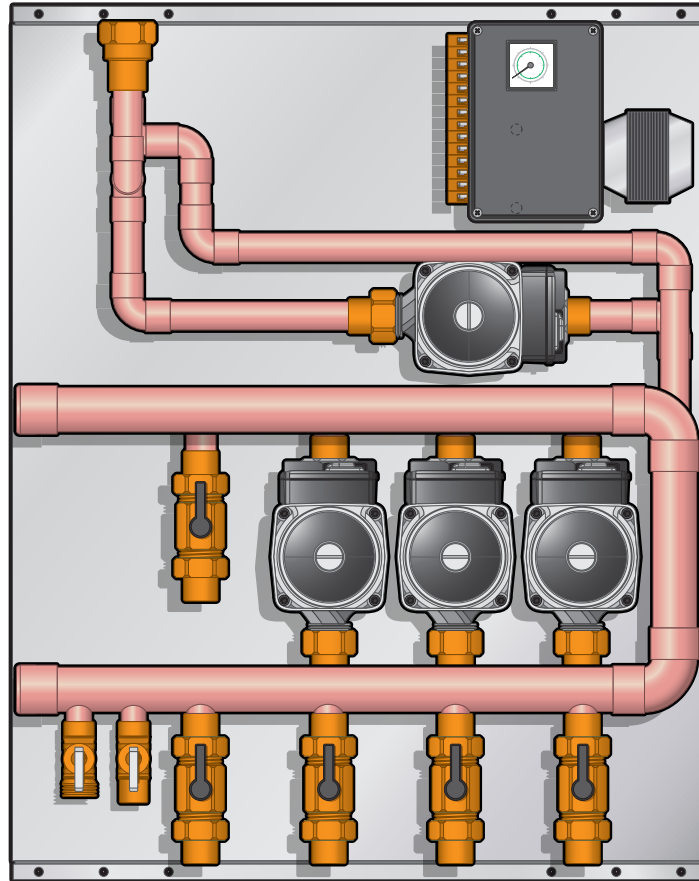
- T-BO-KD-1111** Knight Boiler Panel with (1) (1) DHW Zone with Priority, and (1) Take Off
- T-BO-KD-1121** Knight Boiler Panel with (1) DHW Zone with Priority, (1) Low Temp Zone and (1) Take Off
- T-BO-KD-1131** Knight Boiler Panel with (1) DHW Zone with Priority, (2) Low Temp Zones and (1) Take Off
- T-BO-KD-1140** Knight Boiler Panel with (1) DHW Zone with Priority and (3) Low Temp Zones

Knight Boiler Panels - 2000 Series

- T-BO-KD-2111** Knight Boiler Panel with (1) DHW Zone with Priority, (1) Low Temp Zone and (1) Take Off
- T-BO-KD-2210** Knight Boiler Panel with (1) DHW Zone with Priority, (1) High Temp Zone, (1) Low Temp Zone
- T-BO-KD-2310** Knight Boiler Panel with (1) DHW Zone with Priority, (2) High Temp Zone, (1) Low Temp Zone
- T-BO-KD-2120** Knight Boiler Panel with (1) DHW Zone with Priority, (2) Low Temp Zone
- T-BO-KD-2130** Knight Boiler Panel with (1) DHW Zone with Priority, (3) Low Temp Zone

*** Note:**

The following parts lists and application drawings are general samplings. Each panel configuration dictates the required components, including pump type. See the Technical Data section of the manual for specific information on each part in your particular variation of the Tamas Knight Boiler Panel.



T-BO-WO-1301 Model Shown

Description

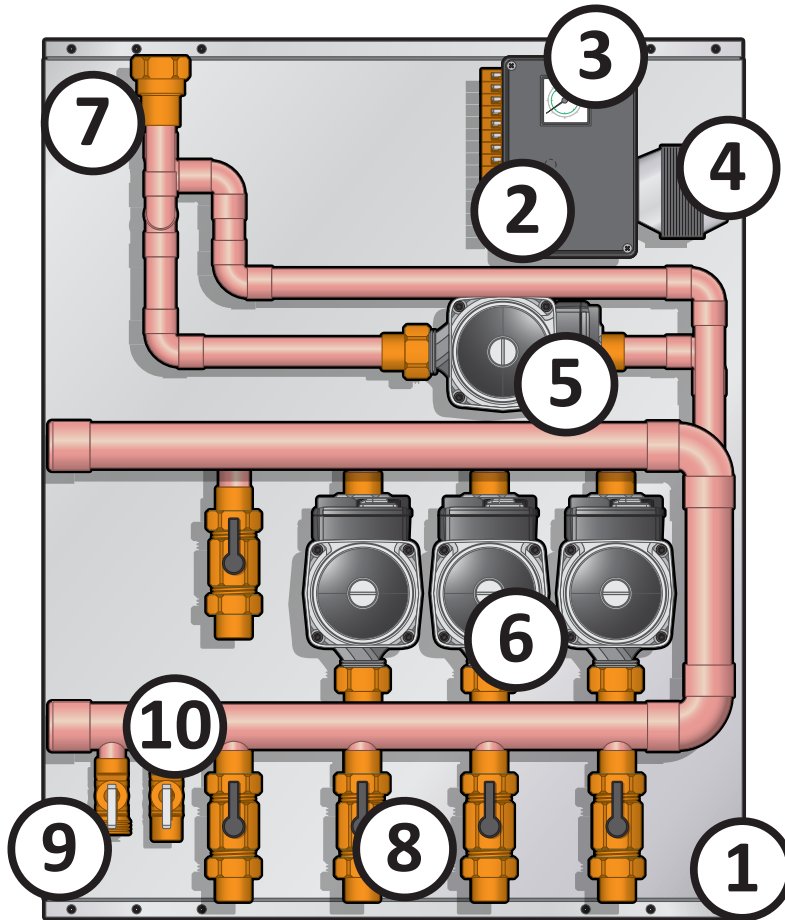
The Knight Boiler Panel is configured specifically to work in unison with the Knight Heating Boiler. The panel is designed to fit underneath the boiler so that the supply and return connections on the bottom of the boiler will line up directly to the supply/ return connections on the Tamas panel. The Tamas panel can support up to a maximum of 4 pumps.

Main Features

- Galvanized steel back plate and silvervein powdercoated cover
- Plug and Play Design
- Fully Wired
- ETL approved

Technical Data

- Max. Operating Temperature: 93°C/200°F
- Max. Ambient Temperature: 49°C/120°F
- Max. Operating Pressure: 10 Bar/145 PSI
- Power supply: 120V 15A

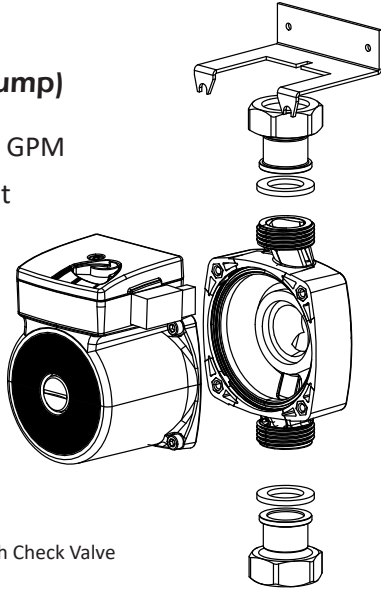


Components			
1	22" x 26" Galvanized Back Plate	6	System Pumps UPS 15-58
2	Control Box with Power Cable	7	Boiler Hook-Up
3	Temperature Gauge	8	Tamas Ball Valves
4	24V AC Transformer with Internal Fuse	9	Hose Bib Hook-Up
5	Boiler Pump UPS 15-58	10	Fill Valve

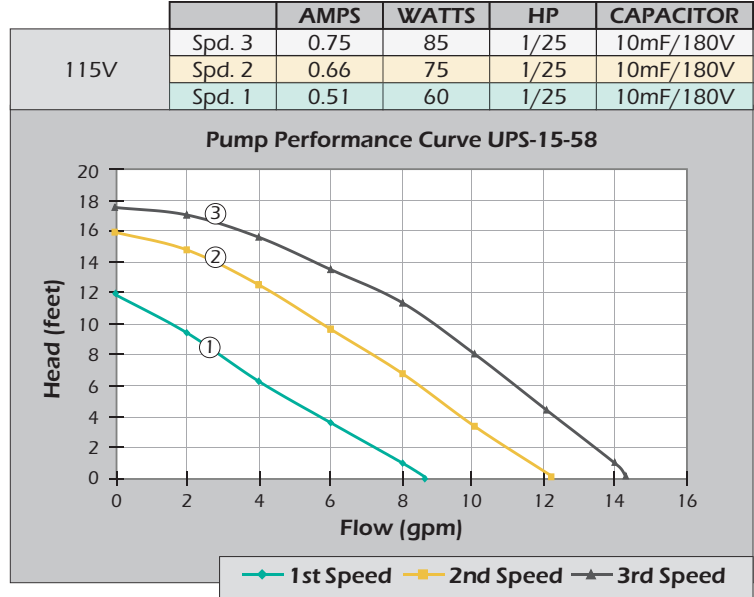
Pump Circulator

UPS-15-58 (3 Speed Pump)

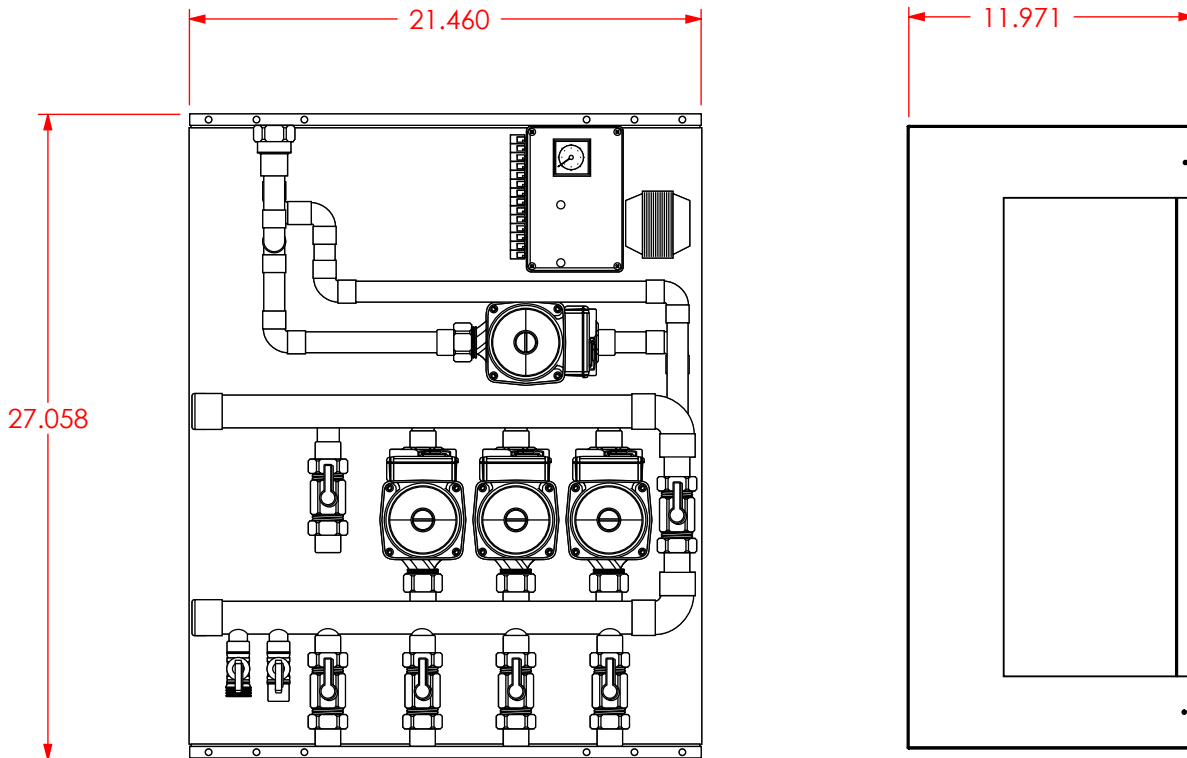
- Flow range: 0 - 17 U.S. GPM
- Head range: 0 - 19 Feet
- Motors: 2 Pole, Single Phase
- Maximum fluid temperature: 230°F(110°C)
- Minimum fluid temperature: 36°F(2°C)



* Maximum fluid temperature with Check Valve present: 200°F



Dimensions



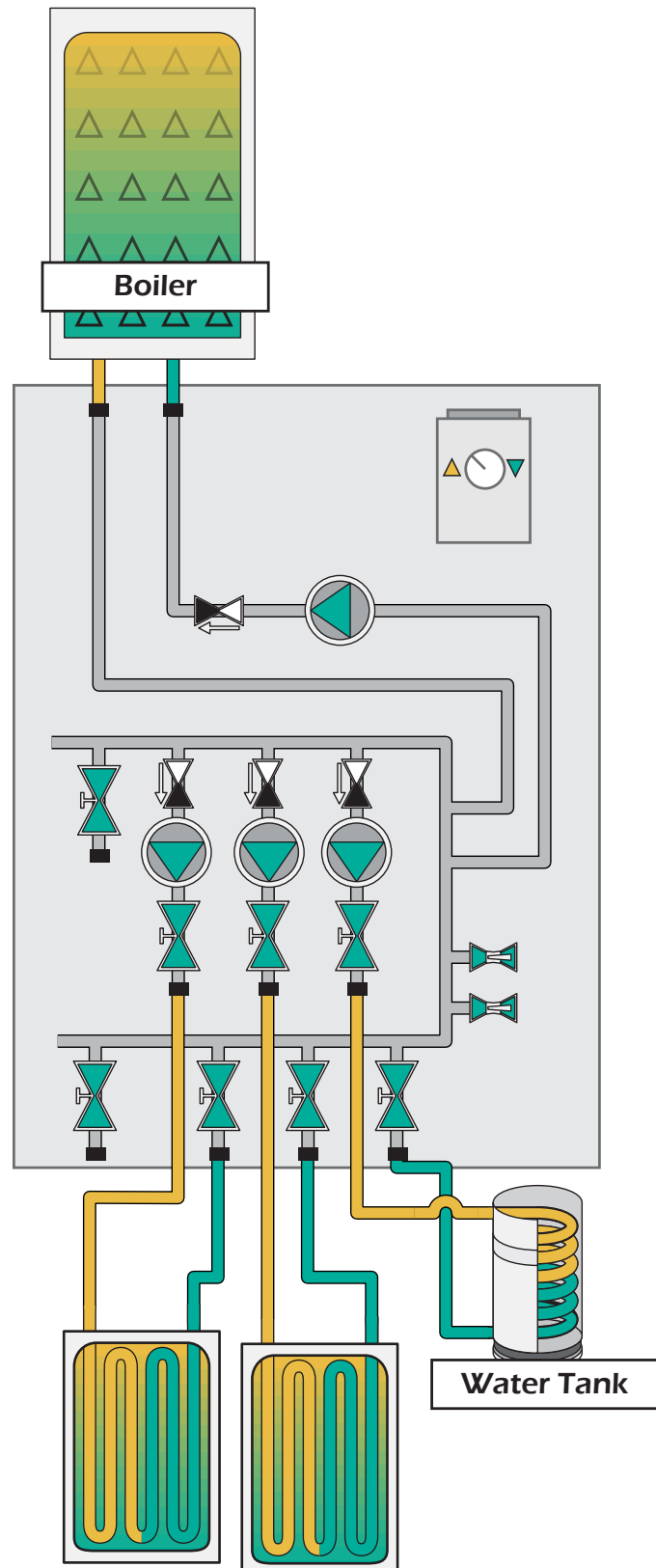
NOTE: Dimensions are in inches.

Operation of the Primary

The primary circuit is composed of a Boiler pump and ball valves for the pump maintenance. When the Knight Boiler panel is connected to the boiler, the panel regulates the water distribution quantity to accommodate the demand. The hydraulic separation (close tees) permits the dynamic separation of the primary and secondary flow.

Operation of the Domestic Hot Water (DHW)

When a domestic hot water demand to the boiler is signaled from a sensor or aquastat (sold separately), the boiler will output 120V to the DHW pump on the Tamas panel. The panel will disconnect the active zone pumps and sends a message to the Knight boiler to rise the internal temperature. This water is heated and distributed as domestic hot water. When the domestic hot water is satisfied; the Knight boiler disconnects the high temperature target output and reverts to the pre-set zone temperatures that were previously active. This method providing precedence to the domestic hot water requirements before the zone heating load of a building is known as domestic hot water priority.

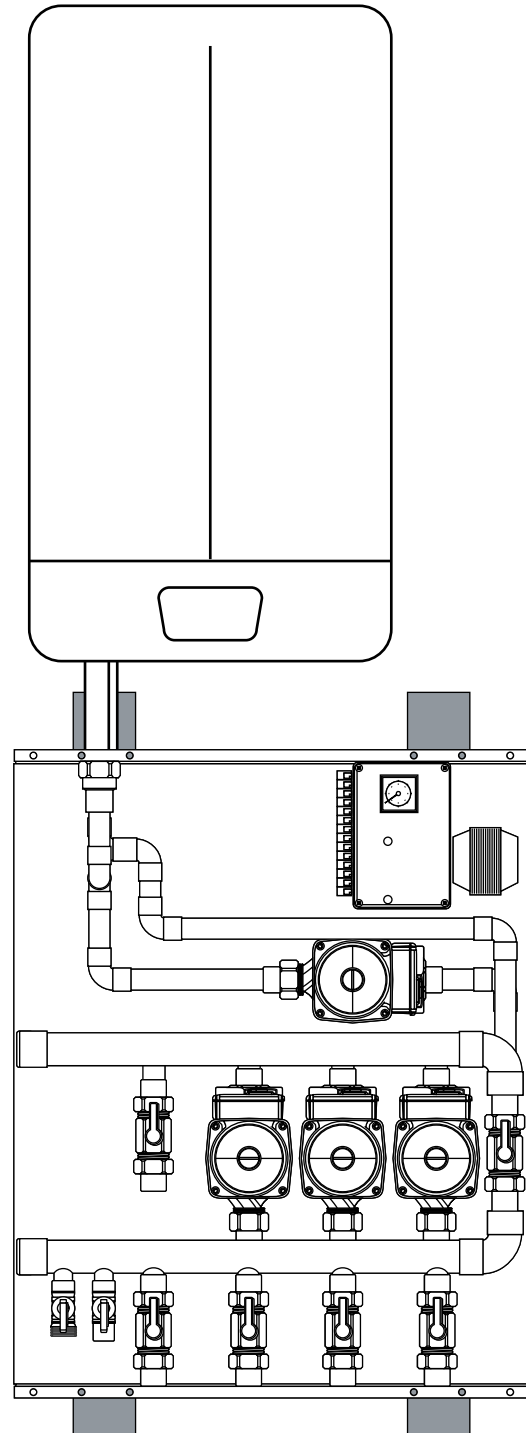
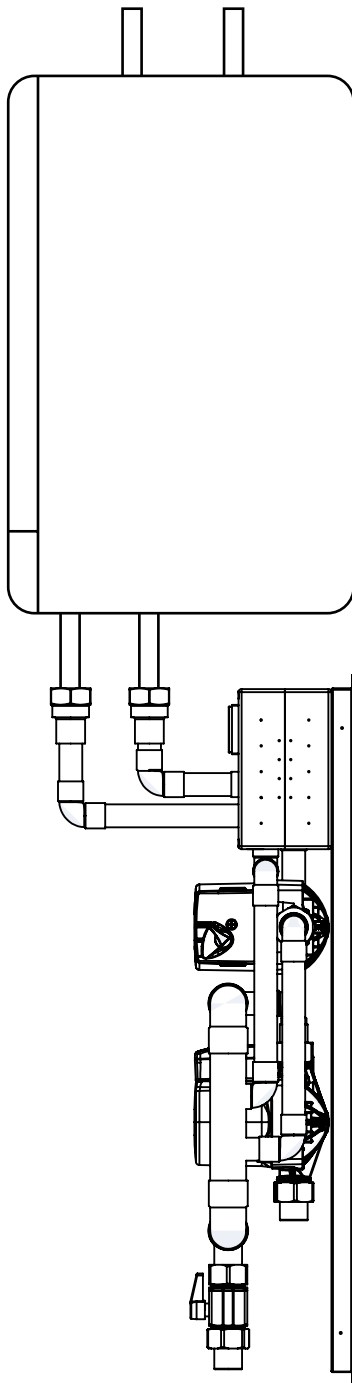


Mounting

Prior to mounting the panel, ensure the wall is capable of supporting the weight of the panel. Ensure that a 120V receptacle is within reach of the plug-in transformer. The KNIGHT series panel should be mounted directly below the boiler.

Step 1: Align and level the panel inlet/outlet piping with the boiler outlet/inlet piping.

Step 2: Secure the panel in place with supplied screws.

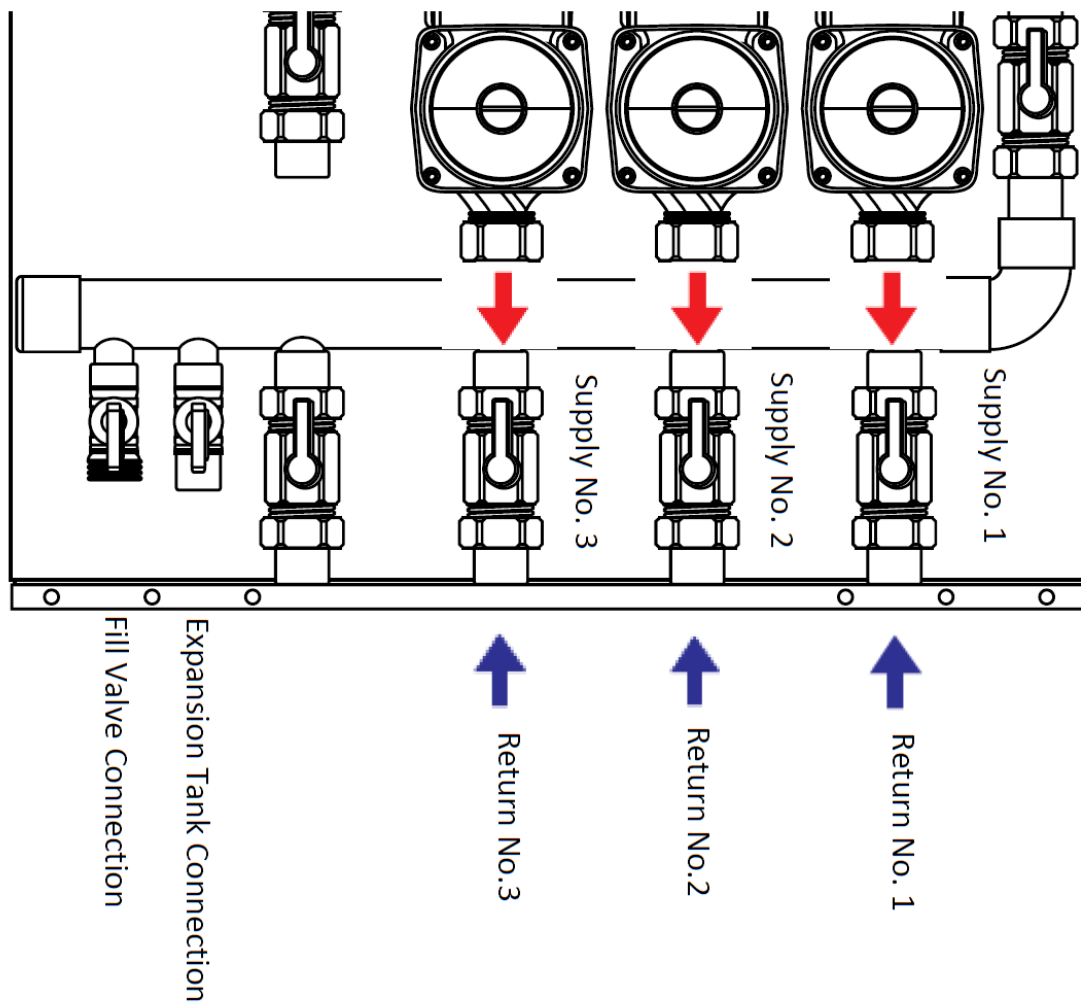


Piping Hookup

With the panel hooked up to the boiler (see page 7) you can now make the rest of the connections. The supplied valve must be used for all panel connections - do not over-tighten the panel connections, as this will damage the rubber washers.

Step 1: Disconnect the tail piece from the ball valve and solder copper pipe. Use precautions when soldering or applying heat within 16" of the panel.

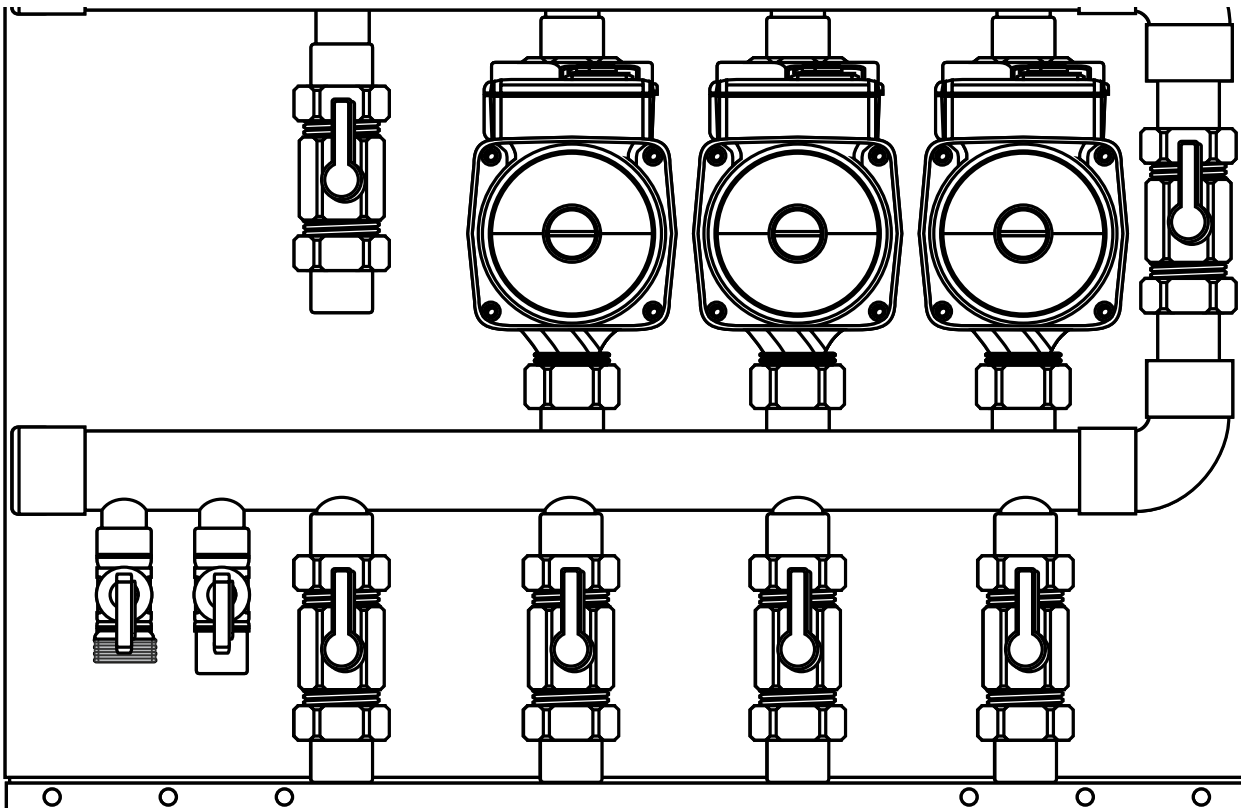
Step 2: Connect the tail piece back to the the ball valve and tighten it.



Fill & Purge Note: Additional purging steps may be required for the rest of the hydronic system.

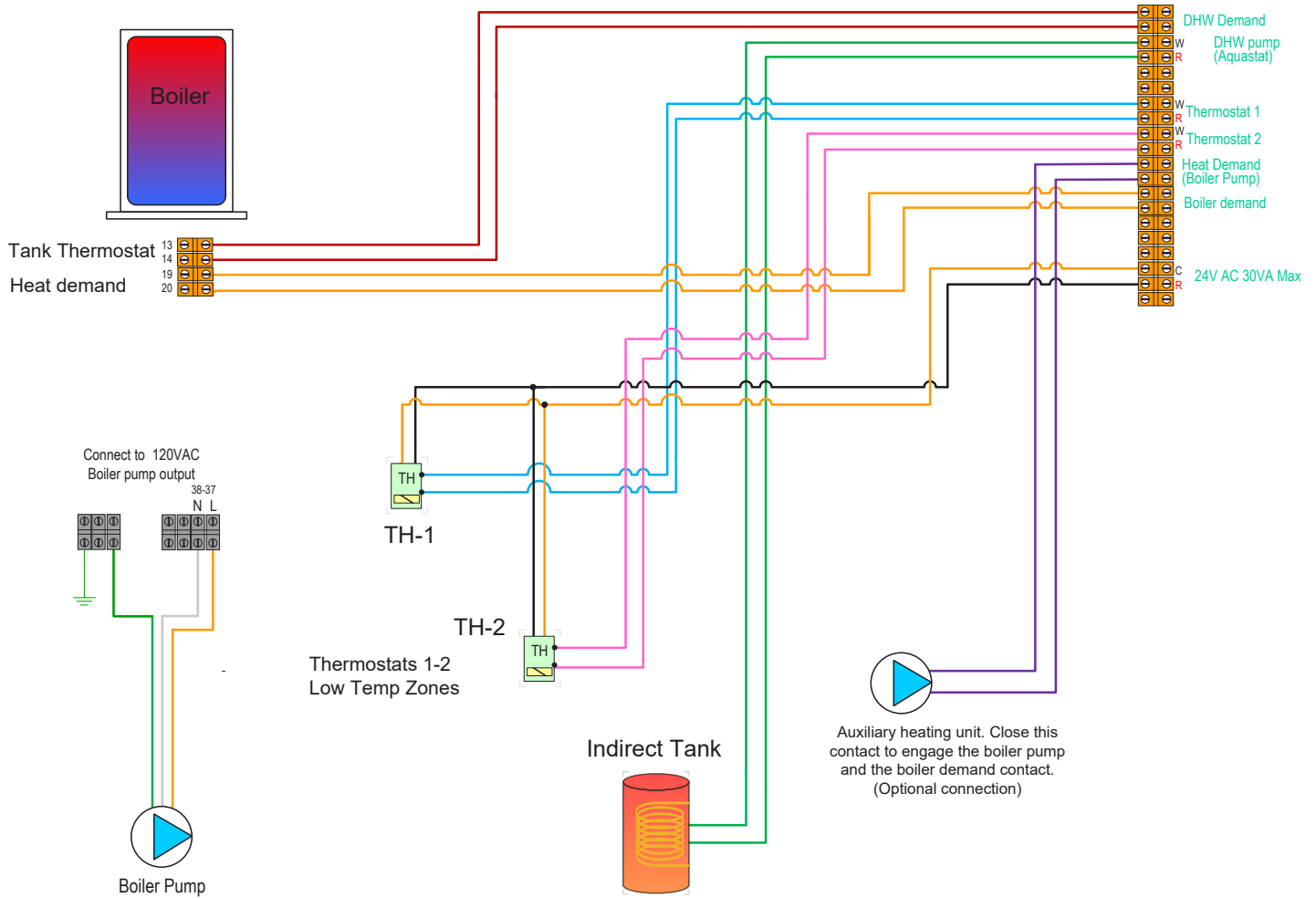
The following steps are recommended in order to fill the panel with water and purge entrained air once piping is completed, and before activation of the panel.

- Step 1: Ensure the panel is not plugged in.
- Step 2: Install recommended purging valve on return zone line (field supplied)
- Step 3: Fully close all isolation valves to the zones
- Step 4: Attach a fill hose and a purge hose (not included)
- Step 5: Fill the system.
- Step 6: Slowly open the purging valve on the return side of the zone line to let the air out of the system.
- Step 7: After the above procedure is done, close the air purging valve.
- Step 8: Finally close all the valves to isolate the zone from the panel before moving on the next zone.
- Step 9: Repeat this procedure based on the amount of zones on the board.
- Step 10: Vent all pumps (use a large flat head screwdriver to avoid damage to vents) before starting the system.
- Step 11: Check for leaks at connections. If any leaks are found, use a back-up wrench and carefully tighten until leak stops. Do not overtighten.
- Step 12: Pressurize system to the required operating pressure.



Wiring

All electrical wiring to the Tamas panel (including grounding) must conform to local electrical codes and/or National Electrical Code, ANS/NFPA No. 70 - latest edition, or the Canadian Electrical Code, C22.1 – Part 1.

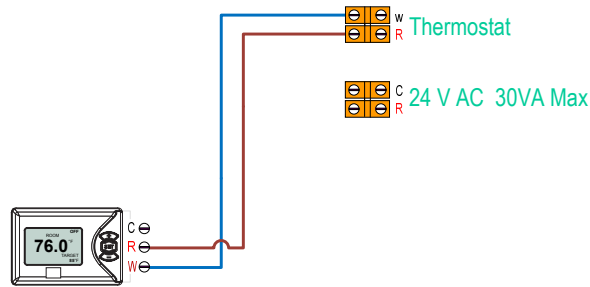


Thermostat 1-2

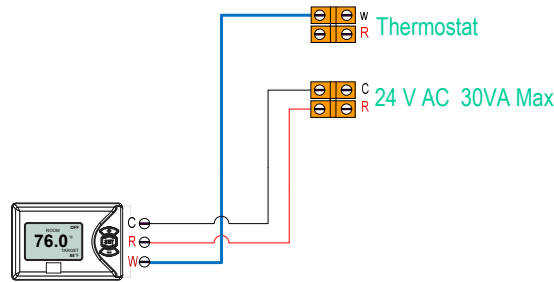
Connect the thermostat for a space heating zone to the terminal block on the Tamas Panel. Do not supply 24V power to the thermostat circuits or attempt to supply 24V AC for any other application.

For the thermostats that require continuous 24V AC power source, connect the thermostat power input to the 24V AC terminal on the Tamas Panel.

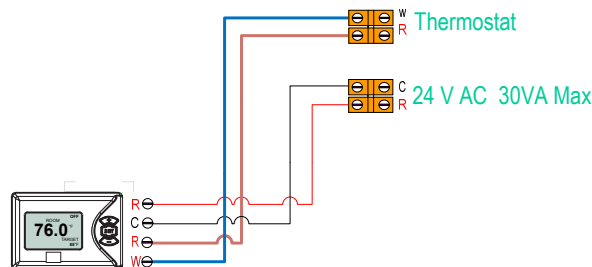
2 Wire Thermostat



3 Wire Thermostat



4 Wire Thermostat





Limited Warranty

Tamas Hydronic Systems Inc. warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of purchase from a Tamas Hydronic Systems inc. authorized Dealer.

If the product proves to be defective within the applicable warranty period, Tamas Hydronic Systems inc. on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When Tamas Hydronic Systems Inc. Provides replacement, the defective product becomes the property of Tamas Hydronic Systems Inc.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest Tamas Hydronics Systems inc. office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to Tamas Hydronic Systems Inc. with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to Tamas Hydronic Systems Inc. without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. Tamas Hydronic Systems Inc. Reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

Limitation of Warranties.

If the Tamas Hydronic Systems Inc. product does not operate as warranted above the purchasers sole remedy shall be, at Tamas Hydronic Systems Inc.' s option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. Tamas Hydronic Systems Inc. neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of Tamas Hydronic Systems Inc. products.

Tamas Hydronic Systems Inc. shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

Limitation of Liability.

In no event will Tamas Hydronic Systems Inc. be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of a Tamas Hydronic Systems Inc. product, however caused and on any theory of liability. This limitation will apply even if Tamas Hydronic Systems Inc. has been advised of the possibility of such damage.

Local Law.

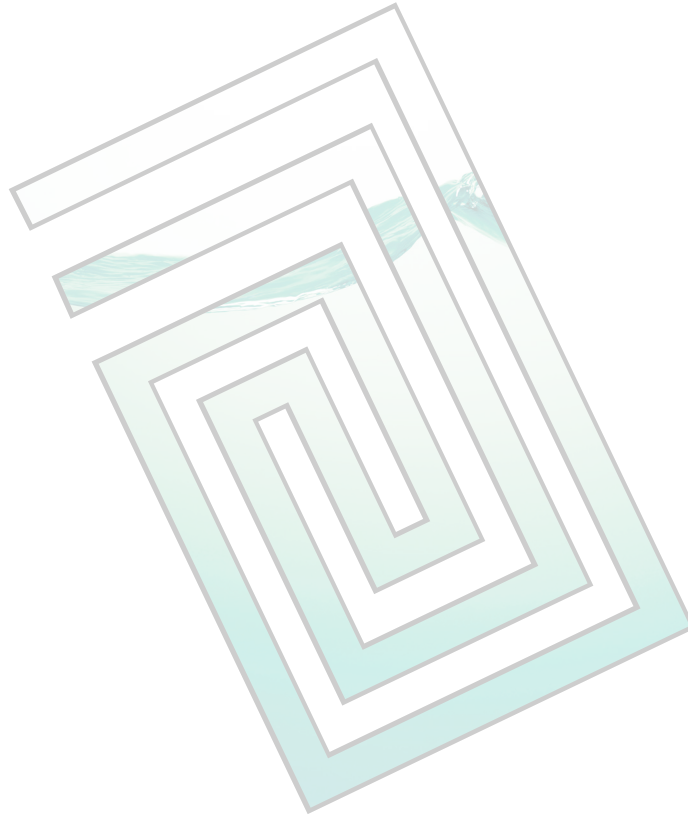
This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may:

Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or

Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.



Custom, Reliable Hydronic Systems

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