

HPS Controls Ltd.

Series 900N & 900T PSS

Primary/Secondary Stations

Heating and Radiant Floor Zone Control Stations

Installation Instructions



Thank you for purchasing the finest in heating and radiant floor Control Stations. We are confident that you will enjoy years of trouble free service from this Station. As with any product requiring specific installation guidelines, a good understanding of **ALL** the system components and final product is necessary to achieve the optimum results. This manual has been kept as short and uncomplicated as possible.

**Please read the entire manual before
beginning your installation**

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Applications & Features

Primary/ Secondary Zone Control Stations

- Consists of a single pre-piped and pre-wired unit to control up to 2 zones of hydronic heating.
 - On the "N" Series, the installer can configure and choose which zones are high or low temperature by setting simple jumpers.
 - Each circulator pump is able to operate a specific zone independently.
 - UPS 15-58FC Grundfos pumps are standard, with optional UPS 26-99FC (Iron), UPS 26-99BFC (Bronze), UPS 15-55SFC (Stainless) and UPS 15-55F/LC (Alpha) Grundfos pumps available.
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High Temperature Zones

- Used for:
- Fancoils
 - Indirect Hot Water Tanks
 - Base Board heating
 - Joist heating
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Low Temperature Zones

- Used for:
- In-Floor Heating
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Circuit Board Technology

New circuit board technology enables the optimum in complete boiler system control, and simplifies wiring of the system.

Features within the circuit board include:

- Boiler High and Low temperature end switch contacts
 - Various timer settings for pump exercise
 - Low water cut off contacts with indicator
 - Zone one and two priority setting
 - Post purge feature
 - Jumpers for adjustment of all field settings
 - Each zone to be set, supplying either high or low temperature output from a condensing boiler
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Zone Control Station Installation

Important **All local code requirements must be followed.**
Contact your local plumbing inspection department for requirements in your area.

Installation Instructions Refer to your shipping list and confirm that all of the components have been received and are undamaged. If you received damaged material, please notify the freight forwarder and the supplier immediately.

1. The Zone Control Station should be installed close to the heating appliance to simplify the piping installation.
 - Fasten the Station to the wall using a minimum of six #10 size screws.
 - When possible fasten a wood backing of either 2x4 or plywood in place to support the Station.
 - Attach a 2x4 to the wall to support the Station from underneath when mounting the Station. Remove after mounting the Station.
2. The “Main Supply” and “Main Return” lines to the Zone Control Station are 1” copper.

1” ball valves **must** be installed externally on the main **supply and return** line to isolate it from the boiler. This will assist in purging of the system and for servicing.

 - Zones 1 & 2 supply and return lines are ¾” copper and come with attached ball valves on the supply and return.
3. The ½” feed water connection located on the side of the station is designed to accommodate an external expansion tank, along with a system feeder or fill valve assembly.
4. The Indirect tank or Domestic water exchanger, in most applications, should be installed on the Zone 1 supply and return. This will allow it to benefit from the priority zone feature.

Wiring a Station

Refer to “Circuit Board Wiring Instructions” included with this manual.

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System / Station Purging

Refer to Diagrams "A" & "B" for illustrated Zone Stations.

Removing Air from the System

All the air in the system must be removed during the filling of the system. Each zone must be purged independently. The PSS Station comes equipped with a hose bib purge valve to aid in this procedure.

1. Place a garden hose on the purge valve within the Station, run to a convenient drain, and open the purge valve.
2. The 1" ball valve located on the primary loop within the station must be shut off for purging.
3. Ensure that the externally installed boiler return ball valve is closed.
4. Close the ball valves on all zone supplies and returns.
5. Open Zone #1 supply and return ball valves. Allow the water to flow through Zone #1 until the water coming out from the hose has no air showing. Continue this for each circuit, purging one zone at a time.

Note:

Close each zone after purging so that only one zone flows at a time. In some instances, if running a zone supply to a distribution manifold for in-floor piping, purge each individual floor loop before purging back to the station.

- When all zones have been filled and purged, open all valves. If the station is located a long distance from the boiler, it may also be necessary to purge the main boiler supply and return line.

After all zone and boiler piping has been filled and purged, open all valves.

Caution: Do not forget to open the valves at the Zone Control Station supply and returns, and all valves at the zone manifolds.

If using a Floor Drain

Place the hose into the floor drain approximately 3" to 4" below the water line to allow for the bubbles to be seen as they rise to the surface. Completing the purging procedure twice will reduce the chance of any air in the system. As an option, if a system pressure feed tank is being used, the purge hose can dump back into the feeder tank until a constant stream of fluid is established.

Cold Weather Startup Caution

When doing cold weather start up, it is possible that areas of the slab may be below freezing even with temporary heat being provided. The system should not be filled and purged until it is ready to have the system circulating with the boiler in operation and applying heat to the slab. Depending on the starting temperature of the slab, it may take hours or days for the slab to reach radiant floor operational temperature due to the large thermal mass.

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Circulator Settings

Refer to Diagrams "C" for the Grundfos pump curve.

Setting Speed of Zone Circulators

Once all the piping, wiring, and purging has been done, the circulators within the Station have an adjustable speed setting that needs to be set.

Zone Circulators provided within the Station are Grundfos UPS 15-58FC (Iron) , UPS 26-99FC (Iron), UPS 26-99BFC (Bronze), UPS 15-55SFC (Stainless) and UPS 15-55F/LC (Alpha).

These pumps are very flexible due to the option of setting 3 different operating speeds to match the head loss / g.p.m. of the specific zone/boiler.

To determine the desired speed setting, refer to "Grundfos Pump Curves" diagrams. Find the curve which best matches your zone head loss and flow rate, then set the speed accordingly.

- Adjust the Circulator by turning the set lever (located on the side of the circulator housing) to the required setting 1, 2, or 3.

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Powering up the Station

Instructions To power up the station follow these instructions:

1. Turn on the power from the main electrical disconnect.
2. Turn on the ON/OFF switch located on the Zone Control Station.
3. Be sure the power indicator light is ON, showing power to the Zone Control Station.

Note: Any time power is applied to the Zone Control Station the timer system will activate if any of the timer jumpers are in place.

4. Check that the Timer-LED light on the circuit board is **flashing**. This is the Normal Condition.

If light is ON continuously, this is an Abnormal Condition.

- There may be a problem with an external low voltage connection to the board. Check all thermostat and end switch connections.

If light is OFF, this is also an Abnormal Condition.

- Check power supply.

5. Wait for the pump timer override period to finish if activated. Turn up the thermostat for each zone in turn. Confirm that each zone is operating properly, and that the correct end switch is closing.
 - On a demand from the thermostat, the zone specific circulator will start along with the primary circulator, giving flow to the activated zone.
 - The LED light for each zone will light up on the Circuit Board.

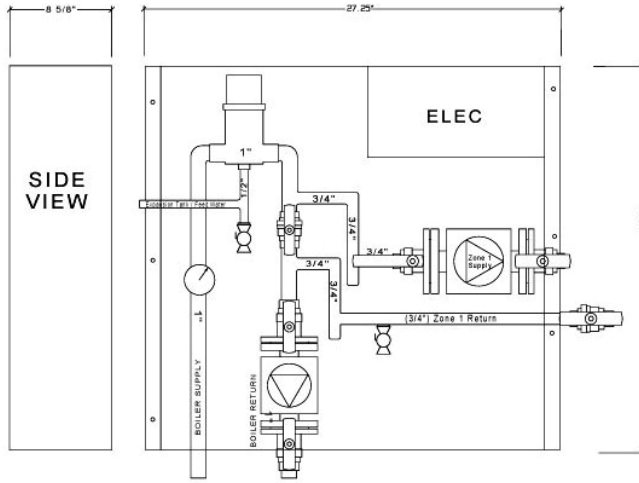
Note:

To troubleshoot possible problems, check operating temperature of pumps. If a pump seems to be running much hotter than any of the others, there may be too much head pressure within that zone, or the zone may be air locked. In many cases if air is still present in the system, the air can move around and air lock zones that were previously purged.

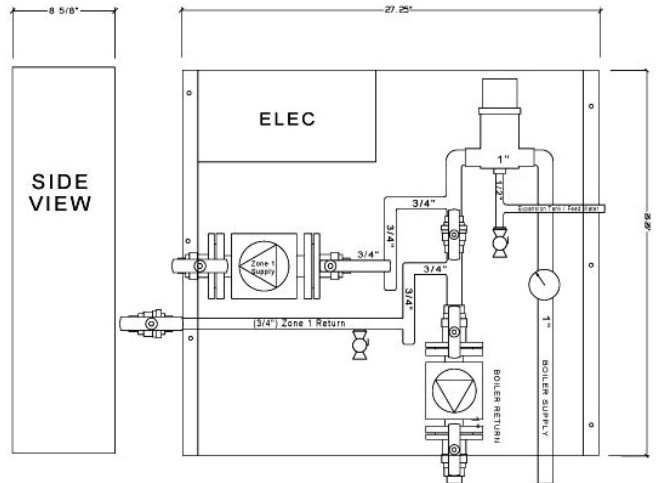
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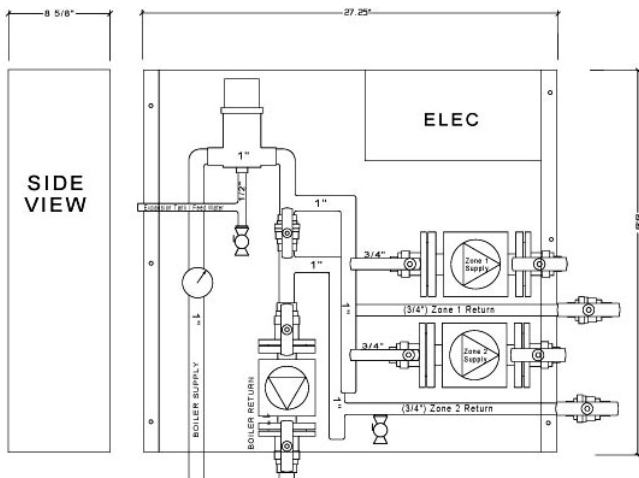
Diagram A (Series 900N Stations)



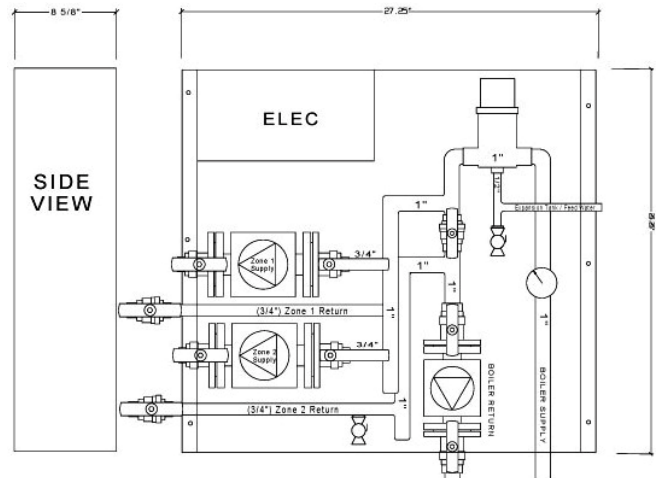
PSS-1LN



PSS-1RN



PSS-2LN

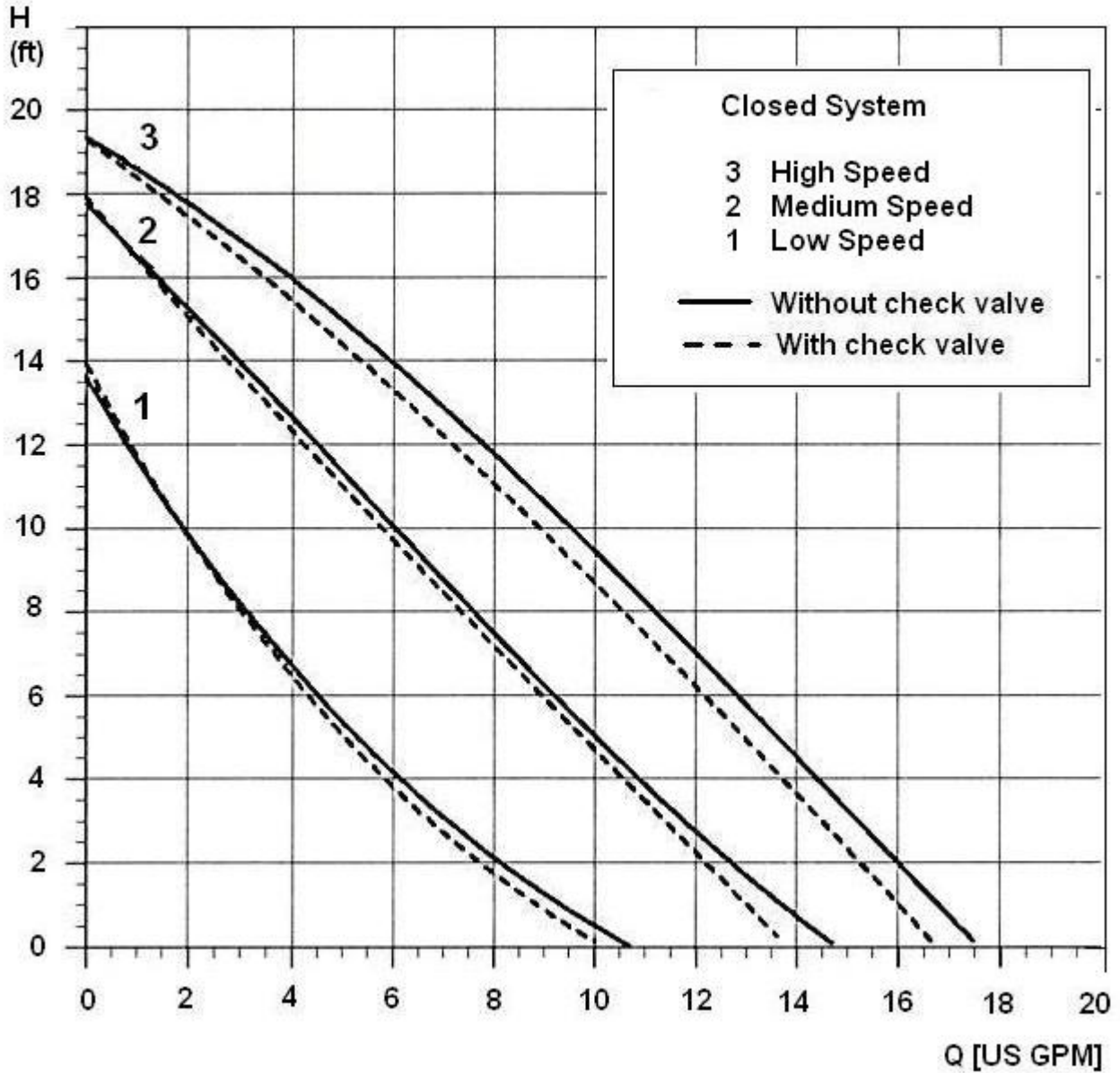


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Diagram C (Grundfos Pump Curve)

UPS 15-58FC/FRC Super Brute



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Warranty

Hydronic Zone Control Stations

LIMITED MANUFACTURER'S WARRANTY

We warrant products manufactured by HPS Controls to be free from defects for a period of one year from the date of purchase. In the event of any claim under this warranty or otherwise with respect to our products which is made within such period, we will at our options, repair or replace such products or refund the purchase price paid to us by you for such products. In no event shall HPS Controls be liable for any other loss or damage, whether direct, indirect, incidental, or consequential. This warranty is your exclusive remedy and shall be in place of any other warranty or guarantee, express or implied, including, without limitation, any warranty of merchantability or fitness for a particular purpose. This warranty may not be assigned or transferred and any unauthorized transfer or assignment thereof shall be void and of no force or effect.

CONDITIONS OF SALE

- TERMS:** Net 30 days. Invoice date is the date of shipment. Subject to credit approval. Past due invoices are subject to 2% per month (24% per annum) late charge.
- RETURNS:** Factory authorization is required prior to any return; the return must be made within (30) days of such authorization. Product to be returned must be shipped freight prepaid, and is subject to a 25% handling charge. RGA form required with serial number, proof of purchase date and a detailed description of problem.
- CLAIMS:** Claims for shortage or error in shipment must be made within (5) days of receipt. Claims for damage or loss in transit must be made directly to the delivering carrier.



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