

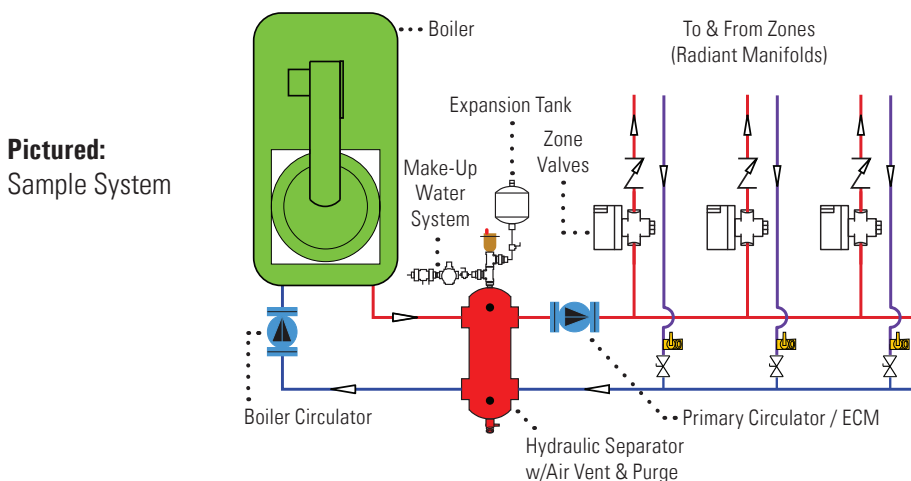
# INSTALLATION GUIDE

## HS-809 HYDRAULIC SEPARATOR

### INTRODUCTION

The HS-809 Hydraulic Separator is a multi-function device that provides hydraulic separation, air elimination and dirt removal in a single, compact unit that requires little maintenance. The HS-809 functions as a “Bridge and a Disconnect” between a heating/cooling systems power generating unit(s) and the distribution system. The flow pattern through the HS-809 depends on the flow rates of the primary and secondary sides of the system (See flow diagrams in the Size Section). The various mixing patterns internal to a hydraulic separator create a blending of the primary and secondary flows and temperatures, thus creating a “Bridge” between the two sides. Modern hydronic systems, especially those that contain low mass, such as water tube boilers, and Modulating-Condensing (Mod-Con) boilers, generally have a relatively high flow/high head pumping requirement to operate at peak efficiency on the Primary side. In contrast, the Secondary, distribution side of the system, often has a relatively low, even variable flow, with very little pumping head. The HS-809 Hydraulic Separator provides a “Disconnect” between these very distinct requirements on the primary and secondary sides of the system, so that they do not interfere with each other. Hence, the “Bridge and Disconnect” benefit of a hydraulic separator.

Additional features of the HS-809 Hydraulic Separator include: Air & Debris Removal - The flows of both the primary and secondary sides of the system go into the HS-809 where the fluid velocities slow allowing air to rise and vent out through a serviceable automatic air vent, while dirt particles fall out and collect at the bottom, ready to be purged out through the Purge Valve with standard 3/4” garden hose connection.



### ADVANTAGES OF THE HS-809

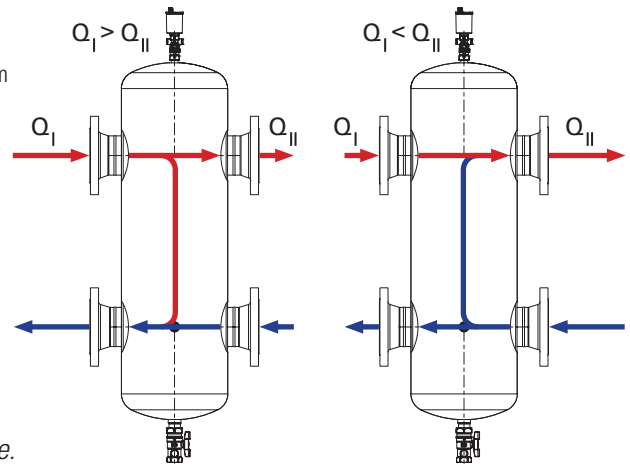
- Provides hydraulic separation between the primary & secondary sides of the system.
- Allows for variable system flow and fixed boiler flow, without pump interference and the potential for flow rate damage to the boiler.
- Includes a high-capacity automatic air vent with isolation valve for the removal of air from the system.
- Includes a drain valve with 3/4” garden hose threads for the purging of collected dirt from the system.
- Available in 6 different sizes.
- Has a plugged port for an optional magnetic insert for optimal ferrous material removal.
- Includes a 3/4” polypropylene insulation shell.

# HS-809 SIZE SELECTION

To select the proper size HS-809 for the project, determine the maximum flow rate for both the primary ( $Q_I$ ) and secondary ( $Q_{II}$ ) circuits, considering each of the possible flow conditions for the system as shown in the diagrams below. Select the HS-809 connection size from the Sizing Chart below that can handle the highest of ( $Q_I$ ) and ( $Q_{II}$ ).

SIZING CHART				
Size	Max Flow Rate	Cv	Weight (lbs)	Fluid Volume (gal)
2"	46	*	42	2.7
2-1/2"	77	*	55	4.5
3"	110	*	79	9.5
4"	185	*	106	17.4
5"	286	*	161	27.7
6"	418	*	214	28.8

**Pictured:  
HS-809**  
Flow Diagram



\*The pressure drop through the HS-809 is so low, the Cv is not measurable.

## INSTALLATION / ASSEMBLY

1. The HS-809 hydraulic separator must be installed on horizontal pipes.
2. Install air vent in the 3/4" tap of the HS-809. This fitting has an o-ring seal, so no Teflon tape is needed.
3. Install drain valve in the 1" tap of the HS-809. This fitting has an o-ring seal, so no Teflon tape is needed.
4. If the optional magnet is being used, remove the factory installed plug and install the magnet. This fitting has an o-ring seal, so no Teflon tape is needed.
5. Once all the components are installed into the HS-809, it can be connected to the system piping. Make sure that the air vent is at the top and the drain valve is at the bottom.
6. Using a good quality ring or full face gaskets (not included), Class 150 flanges (not included), nuts and the proper length bolts (not included), connect the HS-809 to the system piping.
7. Make sure that all the piping the HS-809 is connected to is properly supported. The pipe supports must carry the weight of piping and the HS-809. The weight of the HS-809 is shown in the sizing chart above.
8. After the system has been pressure tested and verified to be leak free, install the insulation jacket around the HS-809.

## MAINTENANCE

While it is possible to preform maintenance on the HS-809 at any time, it is advisable to carry out the below steps when there is no system flow. During normal operation, debris in the system hits the screen in the HS-809 as it passes through, falling to the bottom of the housing. Additionally, any ferrous material would be collected on the (optional) magnetic insert.

System maintenance should be performed on a regular schedule. On a newly installed system, the system designer may set the schedule for the facility. If no schedule is provided, it is generally recommended that the system be cleaned after 1 week of operation. If there is a substantial amount of debris removed, then repeat the cleaning in 1 more week. Continue to clean weekly until no debris is seen. Once no debris is seen after the weekly cleanings, the cleaning cycle can be increased to monthly, quarterly and then eventually to yearly. It is not advisable to go more than one year before preforming maintenance.

## MAINTENANCE (CONT.)

---

- A. **Remove the magnet** (if applicable) from the housing, unscrewing it in a **clockwise** rotation. The ferrous material that has accumulated on the surface of the housing will fall off after a few minutes of the magnet being removed.
- B. Remove the tethered cap from the drain valve.
- C. Connect a hose to the threads of the drain valve and direct the other end to a floor drain or bucket.
- D. After a period of 3 to 4 minutes, open the drain valve to allow the debris collected at the bottom of the HS-809 to be blown out.
- E. Once the water flow from the hose looks clear, close the drain valve, remove the hose and reinstall the tethered cap.
- F. If the HS-809 has the magnet, reinstall it into the well and turn it **counterclockwise**.
- G. **Check system pressure** once the above maintenance procedure is completed. If the pressure is low, make sure the water/glycol feed stems is working properly to restore the system back to normal operating pressure.