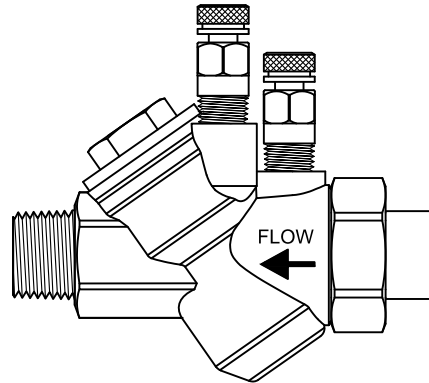




AFLD Series Installation and Operations Manual
Automatic Pressure Independent Flow Limiter Device

U.S. Patent No. 8,061,195



PRODUCT DESCRIPTION: The AFLD is an Automatic Pressure Independent Flow Limiting device, male ended by union, rated at 600 WOG / CWP @ 250°F. The AFLD is supplied with a stainless steel flow limiting cartridge that can be removed for cartridge exchange if necessary. The AFLD comes standard with two P/T ports and a hanging ID tag for easy identification. The union side connections available are NPTM, NPTF, SWT, and a variety of reductions.

PRO Hydronic Specialties (*PROHS*) assumes no responsibility for injuries or damages that result from the nonobservance or noncompliance with installation and operational procedures. It is the responsibility of each link in the supply chain between the factory and the ultimate installation to assure each subsequent party has a copy of this document and understands the proper installation and cautions concerning this product. Upon receipt of shipment, the product should be thoroughly inspected for any damage. Once installed, the product should be checked under pressure for leaks and thereafter at least annually.

Limited Warranty: *PROHS*'s liability is limited to the repair or replacement of the defective component. By purchasing and/or installing *PROHS* products, it is understood the purchaser/installer contractually agrees with the warranty terms as stated here and elaborated in the full warranty statement found at www.prohydronicsspecialties.com. *PROHS* makes no general claim of usability of this product unless *PROHS* is directly advised of the specific use and installation of this product and responds in writing.

CAUTION

CAREFULLY FOLLOW THESE INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE.

- DO NOT use pipe dope or sealant on union threads, o-rings, or in o-ring grooves. Doing so can result in leaks.
 - DO NOT use silver solder for sweat end models.
 - DO NOT use an excessive amount of flux or solder.
 - DO NOT over tighten the union nut. Tool marks on the union nut indicate over tightening.
 - DO NOT adjust factory installed and tested fittings.
 - ALWAYS use a heat sink when soldering. Do not overheat product.
 - ALWAYS use properly engineered pipe supports and avoid placing excessive loads on the product.
 - ALWAYS perform no less than annual inspections on components. These products are dynamic in nature and due to varying system conditions there are no representations as to the duration of useful life for these products in excess of the warranty.
 - ALWAYS pressure test the components once installed to assure no leaks exist. If a leak or defect is found, immediately isolate from pressure and contact the factory for repair or replacement under warranty.
 - ALWAYS isolate the product from pressure when leaks or damage are detected to avoid property damage and contact the factory immediately to determine appropriate actions. The factory is not responsible for damages as the result of any repairs performed on the products while under pressure.
- Failure to follow these cautions, not following standard industry practices, and/or using non-trained/unqualified installers could result in catastrophic failure.

Installation Procedures

General:

- PROHS automatic flow control valves operate correctly in one direction only.
- Observe flow arrow for proper orientation.

Threaded End Valves:

- Inspect the pipe threads on the valve and piping to ensure they are clean and free of burs or other foreign material.
- The union nut should be hand tightened or snugged with a wrench to seal sufficiently.
- If a wrench is used to tighten the union nut, use a back-up wrench to prevent the valve from turning.
- If a drip occurs near the union nut, check the o-ring and ensure the surface is clean.

Sweat End Valves:

- Clean the valve and tube ends with a wire brush before soldering.
- ALWAYS - Wrap the valve with a heat sink.
- Direct the flame away from the center of the valve body and remove excess flux and solder.

Automatic Flow Limiter Device:

- Each AFLD stainless steel limiting cartridge is factory assembled and calibrated individually - the rate of flow will be within $\pm 5\%$ of the specified GPM.
- The AFLD cartridge is fully automatic and does not require any adjustment in the field.
- Straight sections of pipe upstream or downstream from the AFLD is not necessary for proper operation.
- The cartridge may be removed for cleaning, inspection, and exchange without removing the entire valve from the piping system by following these steps:
 1. Close valves to isolate the AFLD.
 2. Remove pressure from the AFLD.
 3. Loosen and remove valve cap.
 4. Pull the cartridge out of the valve body - clean and exchange if necessary.
 5. Press the piston into the cartridge body several times to verify that the spring is operational.
 6. Inspect all o-rings and replace if necessary.
 7. Reinstall the cartridge in the valve body, replace and tighten the valve cap.
 8. Open upstream valve, then open downstream valve.
 9. Inspect for leaks before releasing for use.

Troubleshooting Guide

(General guide is not inclusive of all situations)

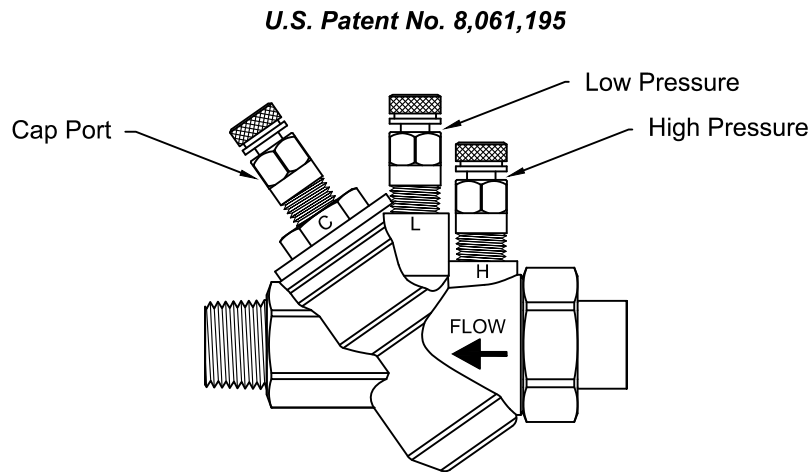
Symptom	Possible Cause	Solution
Low flow	Insufficient system pressure	Valve closed.
High flow	AFLD may be backwards	Verify the flow direction and install correctly.
	Cartridge removed	Ensure cartridge and seals are in place.
No differential reading	Probe not inserted fully	Make sure pressure lines to the differential gauge have pressure.
	Air entrapment in pressure lines or gauge	Make sure the lines and/or gauge are bled of air.
	Valves are shut off	Make sure supply and return valves are open. Make sure the control valve is open.

NOTE: If the AFLD is installed backwards, it will not operate properly.

Operating Instructions

To measure flow:

1. Ensure all valves are open and system pumps are on.
2. Using test probes and a differential pressure gauge, attach the high pressure test probe to the high side port (H) on the valve. If the port is not marked, by default the high port is located closest to the union end.
3. Attach the low side test probe to the port located at the top of the valve cap (C).
4. Read the differential pressure of the flow limiting cartridge.
5. Consult with factory for verification of flow factor calculations.



To verify flow is occurring:

1. Ensure all valves are open and system pumps are on.
2. Using test probes and a differential pressure gauge, attach the high pressure test probe to the high side port (H) on the valve. If the port is not marked, by default the high port is located closest to the union end.
3. Attach the low pressure test probe to the low pressure port (L).
4. Read the differential pressure of the flow limiting cartridge.
5. If differential pressure is within the control range, flow is verified.